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OPEN SPACE-CONSERVATION ELEMENT OF THE
MENDOCINO COUNTY GENERAL PLAN

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PART I
OPEN SPACE-CONSERVATION ELEMENT
OF THE
MENDOCINO COUNTY GENERAL PLAN

RECOMMENDATIONS

1. Adopt this Open Space-Conservation Plan as an Element of the Mendocino County General Plan, thereby fulfilling requirements of State law.
2. Adopt an open space zoning ordinance which implements this Plan.
3. Forward copies of this document to the State Resources Agency, the North Coast Region of the California Coastal Zone Conservation Commission, and other governmental agencies as deemed proper and necessary.
4. Direct all concerned County departments and agencies to acknowledge this General Plan Element in their planning operations.
5. Instruct the Planning Department to review and report annually on the progress of implementation of this General Plan Element.
6. Instruct the County Administration Office to investigate and report on the feasibility of the Implementation Action Program as recommended herein.
7. Instruct the Planning Department and the County Administrator to implement the adopted Action Program.
8. Instruct the County Administration Office to coordinate the various concerned County departments in establishing priorities for open space acquisition.
9. Commend the Open Space-Conservation Citizens' Advisory Committee for the work and time they have expended in the development of this Plan.

INTRODUCTION

The Open Space-Conservation Element of the County's General Plan is a form of long-range planning with the major goals of:

Quality in the natural resource base.

Quality in the environment to provide attractive, safe, and satisfying places to live, work, and play.

Quality in the standard of living.

Without detailed open space planning, the wealth of resources in Mendocino County may be developed contrary to the needs and desires of the citizens with regard to variety, location, and quality of open space. With proper planning, future development activities in the County can be channeled into the beneficial forms for all.

Mendocino County's abundant resources are the source of food, fiber, minerals, and recreation for a large population. These same resources constitute the economic base in the County both for personal income and taxes. Long-range planning can ensure that the demand for intensive residential, commercial, and industrial uses will be met without compromising the goals set forth above.

In the development of this plan, the following considerations have been given utmost attention:

- Protection of all property rights and compensation by governmental agencies when fee title or portion thereof is acquired.
- Encouragement of participation by citizens and interested groups at all stages in the development of this Plan.
- The need for enforcement of existing County laws, especially related to land division.
- Recognition of the County's coastal areas as having special resources, interests, and problems.
- Promotion of multiple-use of open space areas consistent with the characteristics of each area.
- Retention of the maximum amount of open space land in private ownership.

- Legislative action should take place so that zoning which has been established through a study with citizen participation may preempt General Plan policies in that area.

BACKGROUND

Open space and conservation were recognized as major components of planning in the development of the County's General Plan adopted in 1967.

In recent years, State-wide public awareness of the expendability of resources has grown. As a result of this awareness and public pressure, the State has enacted legislation which makes it mandatory for local governments to adopt Open Space and Conservation Elements of their General Plan by December 31, 1973. In order to meet the State requirements, the Mendocino County Board of Supervisors joined with the County of Humboldt in pursuing a Federal grant to complete the study. On November 28, 1972, the consulting firm of Lampman and Associates was retained by the two Counties to complete the Open Space-Conservation Element.

The Board of Supervisors determined the need and desirability of involving citizens in the planning process from the beginning. An Open Space Citizens' Advisory Committee was established and members, representing a wide variety of community interests and locations, were appointed. The Citizens' Committee's major duties were to identify goals and objectives of the planning study and to review the work of the consultant.

This document can be identified as an initial Open Space-Conservation Plan for the County. In the next two years, the following planning tools will be developed: a plan for the coastal area developed by the Coastal Zone Conservation Commission, General Plans for the incorporated cities and several unincorporated communities, sphere of influence plans developed by the Local Agency Formation Commission, several new elements of the County's General Plan, and changes in zoning and the General Plan to bring about consistency between these two entities. These new forms of information and policy will make valuable contributions to future open space planning and should be incorporated into this element of the General Plan.

PLAN OVERVIEW

State legislation has provided definitions of open space and conservation which have guided the development of this element:

"Open space land is any parcel or area of land or water which is essentially unimproved and devoted to an open space use as defined in this section and which is designated on a local, regional or State open space plan as any of the following:

1. Open space for the preservation of natural resources....,
2. Open space used for the managed production of resources....,
3. Open space used for outdoor recreation....,
4. Open space for public health and safety....

A conservation element should include...the conservation, development, and utilization of natural resources including water and its hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals, and other natural resources...."

In the following Plan, all of these considerations have been arranged in three major categories:

1. Natural and managed resources.
2. Recreation and cultural needs.
3. Health and safety.

For each of these categories, an inventory of appropriate lands has been made, maps have been drawn, the pertinent questions and problems discussed, objectives formulated, and implementation proposed. The environment inventory is a separate document which is incorporated into this Plan. Large scale maps are available in the Planning Department, and small scale reproductions have been included here summarizing the lengthy analysis conducted by the technical staff and Citizens' Committee. Goals, objectives, and specific implementation procedures are listed at appropriate places in the body of the Plan as follows and also separately at the end.

Compilation of all these components constitutes the Open Space-Conservation Element of the County's General Plan.

THE PLAN

I. CONSERVE OUR NATURAL RESOURCES

Resources, whether subject to management by man or not, are sensitive and valuable assets to the County. All resources are intimately connected with and dependent upon each other, just as man is dependent upon them. Forest, cropland, and grazing land is subject to intensive management and control by man. All forms of water, wildlife, fish, minerals, and vegetation are subject to man's influence.

It is necessary that man's relationship with these resources is such that they continue to provide him with food, fiber, and minerals. The harvesting and processing of these resources provide a major portion of the employment, income, and tax revenue in the County.

The natural resources not subject to intensive management are equally important to the County for their attraction to a large recreational industry, aesthetic enjoyment, and contribution to the proper total functioning of the land.

In the past, short-sighted, uninformed, or selfish practices have adversely affected our resource base. Should resources become depleted, the concomitant increase in their value may trigger further mismanagement. It is therefore appropriate that long-term plans be made for the conservation of our natural resources.

A. CONSERVATION

Mendocino timber harvests rank second in the State. The lumber industry provides approximately one-third of the County labor force. The County lumber industry's contribution to the State-wide harvest has remained quite constant over the past 10 years. Increased utilization standards and improved mill technology have allowed the lumber and wood products industry to remain a major segment of the County's economy.

Prime forest land, defined as that which qualifies for inclusion under the Williamson Act, constitutes 47 percent of the County. Approximately three-quarters of Mendocino's commercial forest land is classified as "young growth," i.e., less than 100 years of age. Private landowners account for 84 percent of the total commercial forest area. Redwood predominates as the major conifer tree species with Douglas fir second in importance. Ponderosa pine also exists as an important commercial forest tree, principally lying in the eastern half of the County.

Much forest land in the County is not presently being managed for timber. If such land were developed in ways consistent with its potential capabilities, it would remain available for future production and consequent contribution to the economy of the County.

OBJECTIVES: Identify and conserve lands suitable for prime agricultural production, including timber. Encourage sustained yield management of forest land.

IMPLEMENTATION: Encourage use of the Williamson Act and the zoning ordinance. Lands with potential for timber production should remain in parcels of at least 20 acres and preferably 80-100 acres. Ownership, timber site class, and general capability for production should be taken into consideration when permitting reduction in parcel size. Acquire open space or scenic easements in critical areas.

B. AGRICULTURAL LANDS

A major problem facing any urbanizing area today is the preservation of prime agricultural soils. The most valuable land for agricultural use - portions of the coastal shelf and inland valleys - are the same areas most susceptible and desirable for intensive residential development.

Since soils are the result of a long natural process combining aspects of climate, vegetation, and mineral composition, it is a logical assumption that the prime soils are a non-renewable resource.

Prime soils may be defined as Agricultural Classes I, II, and III and constitute 74,541 acres, or 313 percent of the County's total land area. In addition, Class IV soils have been identified as important agricultural lands since they support a great deal of the grape acreage.

As with forest land, some prime agricultural soils are not being farmed at present. Development of this land consistent with its potential capability could reserve it for future production.

Even though 10 acres of excellent agricultural land may be an economic unit, larger acreages are more profitable and will encourage the landowner to keep it in agricultural productivity.

OBJECTIVES: Identify and conserve lands suitable for prime agricultural production, including all crops. Create buffer zones around intensive agriculture.

IMPLEMENTATION: Encourage use of the Williamson Act and the

zoning ordinance. Lands with potential for agricultural production should remain in acreages capable of such production. An intensive agricultural zone (for example, A-2) should be modified for our most productive crop land and should not permit reduction in parcel size below 20 acres. Acquire open space or scenic easements in critical areas.

C. RANGE LANDS

Recent pressures from residential development are reducing the acres of prime rangelands and therefore affecting the livestock industry of the County. Some soils suitable for grazing have severe limitations for buildings. The Yorkville soil for example is very unstable but is one of the best rangelands in the County. Prime rangeland may be defined as land which has the capability of carrying one animal unit per year on forty acres or less.

OBJECTIVES: Identify and conserve lands suitable for prime agricultural production, including rangeland. Encourage controlled burning for improvement of brush ranges for livestock production.

IMPLEMENTATION: Encourage the use of the Williamson Act and the zoning ordinance. Lands suitable for rangeland should remain in acreages capable of such production. Acquire open space or scenic easements in critical areas.

D. WATER

Water is essential to life, yet is often abused - unknowingly or otherwise. In addition to its importance to the sustenance of human life, water is important to man for his recreation, is essential to plant and animal life, and provides a habitat for a great number and variety of animals.

Both surface waters and groundwater basins are used extensively for water supply in the County. Groundwater occurs in saturated zones below the surface. Most of the County's water supply originates from the underground resources. Therefore, ensuring a constant, unpolluted supply is important. Unfortunately, in urbanized areas the lands which serve as a natural "sponge" and transmit rain waters to the groundwater reserves are often built upon. The roofs, asphalt, and concrete negate the "sponge" action and water supplies are reduced.

Three major river drainage basins exist in the County: the Eel River basin, the Russian River basin, and the coastal basin. Other important water resources include Lake Mendocino, Van Arsdale Reservoir, several natural small lakes, and several mineral springs and small reservoirs.

OBJECTIVES: Identify and conserve rivers, streams, watersheds, coastal areas, harbors, estuaries, reservoirs, potential reservoirs and lands adjacent thereto which are especially important for water supply, recreation, fish and shellfish production, scientific study or scenic value. The County should be watchful that its potential future water needs not be compromised by short-sighted regional agreements.

IMPLEMENTATION: The zoning ordinance. Mendocino County Comprehensive Soil and Water Plan.

E. FISH

Fresh water rivers are important producers of fish. The most important species for commercial and sportfishing are King salmon, Silver salmon, and Steelhead. These species are anadromous - that is, they spend much of their life in the ocean, returning to fresh water streams to spawn.

Rivers and creeks which have been identified as critical salmon and steelhead spawning and nursery habitats include the Eel River, Russian River, Ten Mile River, Noyo River, Big River, Navarro River, Elk Creek, Garcia River, the Gualala River, and their tributaries. Estuaries at the mouths of these rivers provide important nursery and feeding areas for fish.

Fishing, both commercial and sport, plays an important role in Mendocino County's economy.

Virtually all of the fresh water habitats have been adversely affected by such practices as poor logging methods, construction of flood control facilities without regard to the fish habitat, road construction, and over-grazing. Some industries and septic effluent from urban areas have contributed to a decline in water quality. Great care must be taken to assure that future housing and other urban development do not adversely affect the quality of fish habitat.

The Pacific Ocean provides a valuable habitat and, in turn, supports an important commercial fishing operation and attracts sport fishermen.

OBJECTIVES: Identify and conserve rivers, streams, watersheds, coastal areas, harbors, estuaries, reservoirs, and lands adjacent thereto which are especially important for fish and shellfish production. Improve stream habitat for anadromous fish.

IMPLEMENTATION: The zoning ordinance.

F. WILDLIFE

Wildlife, like fish, is important for ecological, recreation, and economic reasons.

Deer and other game species range throughout the County. The northeastern portion of the County is an important winter range for migratory deer. While deer create serious problems by depredations on agricultural crops, they act as a stimulus to the attraction of hunters and many hunting clubs have been established in the County. Quail, grouse, rabbit, squirrel, and band-tailed pigeons are abundant in the County. The many rivers, streams, and lakes attract a number of waterfowl species. All these contribute to the hunting industry.

Non-game species are equally important for they provide for the proper functioning of their ecosystems. Species as well as bulk number of wildlife have been diminishing in the State - due primarily to the destruction of habitats by urbanization or pollution. Mendocino County, however, retains a number of natural habitat areas and the wildlife which resides there.

The California Fish and Game Commission has declared a number of species to be either rare or endangered. Some of these species, such as the California Brown Pelican, Southern Bald Eagle, and American Peregrin Falcon, have habitats within the County or migrate through the County or its off-shore waters. Local government, like all responsible jurisdictions, should take every precaution to protect the habitats of the rare and endangered species. But, even more important, such species should serve as an example to encourage the protection of all wildlife and their habitat before the rare and endangered list becomes even more extensive.

OBJECTIVES: Identify and conserve habitats especially important to deer, upland game, furbearers, representative animal communities, and rare species. Encourage controlled burning for the improvement of brush ranges for enhancement of wildlife habitat. Encourage deer herd management. Retain existing County control of deer herd management. Identify and preserve areas of special biological significance for education and scientific research.

IMPLEMENTATION: The zoning ordinance.

G. PLANTS

Plants, like animals, are subject to pressures from human civilization and have undergone vast changes due to management by man. The major pressures upon plant communities have been from forestry, intensive agriculture, grazing, and

urbanization. Mendocino County is privileged to have examples of virgin communities, both with regard to forests and grasslands. In addition, the California Native Plant Society has listed 36 species of plants which they consider either rare or endangered within Mendocino County.

OBJECTIVES: Identify and conserve representative plant communities and endangered species. Identify and preserve areas of special biological significance for education and scientific research.

IMPLEMENTATION: The zoning ordinance.

H. MINERAL RESOURCES

A number of mineral resources exist within the County. Minerals are necessary in our lives and play an important role in the economy of the County. Unlike some resources, minerals are essentially non-renewable.

Most predominant of the minerals in Mendocino County are sand and gravel. Deposits are to be found along many rivers and streams in the County. Several commercial extraction operations are currently underway. Deposition of gravel along a meander of a stream may take place every year, but this does not indicate that the resource is infinitely renewable. The long-term effects of yearly harvesting of a gravel resource are largely unknown but may involve stream bed location and depth changes. Gravel and rock suitable for rip rap are found in quarries throughout the County. High quality rock is very limited.

All mining operations including removal of sand and gravel may be deleterious to the other values of the environment.

Other fairly prominent resources include manganese, petroleum, mineral springs, and geothermal power.

OBJECTIVES: Identify and conserve areas suitable for production of minerals, geothermal power, gravel, rock, semi-precious stones, natural gas, and oil. Set guidelines for extraction of gravel and rock which will minimize deleterious environmental impacts, maintain equilibrium of river banks, and prevent unsightly scars.

IMPLEMENTATION: The zoning ordinance. Consider establishing an ordinance which would minimize deleterious environmental impacts and require site rehabilitation of mining operations.

II. INCREASE RECREATIONAL OPPORTUNITIES AND ENHANCE CULTURAL WELL-BEING

Recreational activities, aesthetic enjoyment of open spaces, and various opportunities for appreciation of our out-of-doors are necessary for both the physical and mental health of our population. Mendocino County open space is important on a State-wide basis for provision of these resources. The County, in turn, benefits economically by providing access to these resources.

Cultural, or man-made, resources are as important as natural ones. Historical and cultural features add distinct pleasure and help provide a basic understanding of our society. In addition to a contribution to the County's tourist industry, and hence the County's economy, cultural resources provide a rallying point for community pride.

A. RECREATION

The Pacific Ocean along with the many rivers, lakes, and forests of Mendocino County provides residents with great recreation opportunities. The State's greatest recreational resource, yet a resource which has often been abused, is the shoreline. The Mendocino coastline has not suffered as the more densely populated ocean front areas have. However, pressure for development along the coast is sufficient to encourage present action to preserve appropriate lengths of shoreline. Of 132 miles of shoreline on our coast, only 13 miles are publicly owned. A unique opportunity exists to work with the North Coast Region of the Coastal Zone Conservation Commission in developing a meaningful plan for the Mendocino Coast in the next two years. The eventual implementation of any such plan will ultimately depend a great deal upon the ability and willingness of local agencies.

Funds from many sources are available each year for acquisition and development of recreational areas. The County can take advantage of these programs if sufficient desire is shown.

OBJECTIVES: Identify present and potential recreational areas. Provide adequate amounts of recreational areas at appropriate locations throughout the County. Provide for different types of recreation, including rest stops, sporting, hunting, fishing, bicycling, riding, camping, off-road vehicles, water-oriented activities, back-packing, and wilderness experiences. Encourage private development of recreational activities and areas. Provide for proper placement of second home recreational subdivisions. Ensure that recreational activities are safe, clean, and compatible with

surrounding land uses. Identify valuable scenic areas and set guidelines for their development. Establish vista areas.

IMPLEMENTATION: The zoning ordinance. Provide for public access to various lands, including the shoreline and other public areas, by acquiring access easement or fee title where access is crucial.

B. CORRIDORS

Parks and open space take on a new meaning and become more significant when they are tied together into a network by scenic highways, trails, and greenbelts. Greenbelts may serve to provide recreational facilities or they may serve purely aesthetic ends.

The State has developed the "Master Plan of State Highways Eligible for Official Scenic Highway Designation," and has identified two potential scenic routes therein: State Highway 1-U.S. 101 and State Highway 20. Beyond posting a poppy sign along the highway once adopted as a State Scenic Route, the State provides little assurance that the scenic qualities of the corridor will be maintained. Other roads in the County are also suitable for classification as scenic routes. Mendocino County will be developing a Scenic Highways Element to the General Plan by September, 1974, as required by State law.

An appropriate system of equestrian, hiking, and bicycle trails can be planned through the development of a Recreation Element to the County's General Plan. Such trails could provide recreation in themselves and could also serve to connect the various City, County, State, and Federal open space recreation facilities.

The County has an opportunity for joint study and implementation with cities and other agencies to develop greenbelts which surround urban areas, thereby retaining the character and visual identity of communities. Greenbelt treatment along rivers, flood control channels, and utility easements provide aesthetic enhancement as well as multiple use for little used and single-purpose facilities.

OBJECTIVES: Designate scenic State and County roads and highways. Conserve open space along transportation corridors. Discourage strip development. Provide linkages between open space areas. Encourage clustering of all types of development. Coordinate with the Local Agency Formation Commission to plan for orderly City limit expansions.

IMPLEMENTATION: Develop Scenic Highways and Recreation

Elements to the County's General Plan. Adopt a sign ordinance. Support State legislation which requires the undergrounding of utilities within future residential, commercial, and industrial subdivisions. Adopt enabling ordinances for scenic easements, open space easements, and density transfer. Freeway agreements entered into by the County should be consistent with this Plan.

C. HISTORICAL AND CULTURAL AREAS

Mendocino County is privileged to hold many historical, cultural, and archeological attractions. A wealth of sites exist, for example Squaw Rock, the Skunk Train, Fort Bragg, Round Valley, and the town of Mendocino. A County Museum has recently been established. Much important work on identification, research, and conservation of sites needs to be done.

OBJECTIVES: Identify and preserve areas of major historical and archeological significance and continue research on such areas. Encourage private and public research to locate areas of historical or archeological importance that are still unidentified.

IMPLEMENTATION: Coordinate with the County Museum staff and the County Administrator's office to create an appropriate body to identify, research, and authenticate sites, pursue implementation programs, and pursue State and Federal grants for site study, preservation, and designation.

III. ENSURE THE HEALTH AND SAFETY OF MENDOCINO COUNTY RESIDENTS AND VISITORS

The removal of hazardous land from intensive residential development is one of the major benefits of open space land. Another important use of open space is reserving land necessary for the provision of water and air quality.

Earthquake faults, tsunami areas, landslide areas, flood plains, steeply sloping land, and areas under airport flight paths all present potential hazards to public safety and are questionable areas for urbanization. Individual life and property is placed in jeopardy as well as burdens to taxpayers in general for they must subsidize an eventual rebuilding of roads, sewers, public buildings, and utilities after destruction in a known hazardous area.

A high quality of water resources, air resources, and freedom from excessive noise are necessary for a healthy existence both in rural and urban areas.

A. FLOOD PLAINS

Many rivers and streams present a potential flood hazard to nearby lands. Even though recent floods have not been overly destructive within Mendocino County, the potential will increase if urbanization is allowed to encroach into the flood plain. With urbanization, the covering of land with impermeable surfaces increases the potential for flooding.

Flood plains need to be effectively defined. Restriction of uses to appropriate activities such as agriculture and seasonal recreational developments will protect both the property owner and the County.

OBJECTIVES: Identify and set guidelines for development of flood plains.

IMPLEMENTATION: Continue present program to implement flood plain zoning.

B. FAULT ZONES AND OTHER GEOLOGICAL HAZARDS

A number of known faults exist within the County, the most notable being the San Andreas and the Healdsburg. The San Andreas fault enters the County from the ocean just north of Manchester and runs southeasterly into Southern California. The Healdsburg fault begins in the Boonville area and runs southeasterly into Sonoma County.

Other forms of geological hazards, such as subsidence and hardpans, exist in the County.

OBJECTIVES: Identify and set guidelines for development of areas having geological hazards, including fault zones and other limitations.

IMPLEMENTATION: The land division regulations, the Uniform Building Code, and State implementation of the Alquist-Priolo Geologic Hazard Zones Act. Develop a Seismic Element to the County's General Plan.

C. AIRCRAFT FLIGHT ZONES

Five publicly owned airports exist in the County. The Federal Aviation Administration has identified clear zone areas at the ends of runways. These areas should be appropriately zoned and used for park, recreation, agriculture, and other open space uses only. Areas around airports are in general subject to higher risks and noise.

OBJECTIVES: Identify and set guidelines for development of areas near airports.

IMPLEMENTATION: Continue present program to implement airport clear area zoning. Begin planning for areas near airports.

D. STEEP SLOPES AND OTHER SOIL HAZARDS

Much of the County lies in steeply sloping and rugged territory. As the bottom lands of the County become utilized, additional development pressures will be placed on the uplands of the County where many soil related hazards exist. These conditions may cause problems in road construction, provision of proper foundations for structures, and maintenance and stability. In turn, these conditions may cause further erosion and water quality problems. Many of these problems can be mitigated by appropriate design standards, careful engineering, and density controls.

OBJECTIVES: Identify and set guidelines for development of areas with steep slopes and areas having soil limitations, including high erosion hazard, severe soil pressure variations, severe shrink-swell behavior, and septic system unsuitability.

IMPLEMENTATION: Adopt an ordinance which controls the density and type of development on steeply sloping land. Consider adoption of grading and cliff setback ordinances. The zoning ordinance and land division ordinance. Conduct a thorough study of pygmy soils to determine their best use.

E. SANITARY LANDFILLS

OBJECTIVES: Identify and set guidelines for development of sanitary landfills.

IMPLEMENTATION: Continue present program of planning for solid waste management.

F. FIRE RISK AREAS

OBJECTIVES: Identify and set guidelines for development of areas with extreme fire risk. Encourage controlled burning for fuel reduction as a vital element in fire prevention.

IMPLEMENTATION: Regulations of the State Division of Forestry. The zoning ordinance.

G. WATER QUALITY

Mendocino County is blessed with a wealth of water resources. Just as important as quantity, however, is quality. The largest lake or the widest river is virtually useless if it cannot be used for recreation; if it cannot support fish and wildlife; if it is too polluted to supply domestic uses; or if it provides not even basic aesthetic enjoyment. Such adverse qualities may seem to residents of Mendocino County not to exist, but to many others in heavily urbanized and industrial areas they have become a reality.

As the County develops, it may become necessary to implement strict controls concerning all effluents including secondary and tertiary waste water treatment systems.

OBJECTIVES: Identify and conserve all areas necessary for the protection of water quality. Set performance standards for industry.

IMPLEMENTATION: The Mendocino County Comprehensive Soil and Water Plan.

H. AIR QUALITY

Mendocino has unique problems with air quality even though the general quality is excellent. Due to the forest products industry, wildfires, vehicle emissions, and topography, local air basins may experience temporary bouts of smog. Rarely do the pollutant levels reach thresholds harmful to health, but visible contaminants can affect mental health and the attractiveness of the region.

OBJECTIVES: Identify and conserve areas required for the protection and enhancement of air quality. Set performance standards for industry.

IMPLEMENTATION: Current Air Pollution Control Board standards.

I. NOISE

OBJECTIVES: Identify and conserve areas required for attenuation and mitigation of noise pollution.

IMPLEMENTATION: Continue present program for adoption of a noise ordinance. Develop the Noise Element to the County General Plan.

IMPLEMENTATION TOOLS

Following are listed some of the many and varied implementation techniques and programs. This list is supplemented by the following chapter: Implementation Action Program. The purpose of the list here is to outline some of the many programs available. It is included because the stress on any open space-conservation program must be placed upon flexibility. In order to implement this Plan it is absolutely necessary to use as broad a range of acquisition-regulation techniques as possible. No single technique is sufficient by itself - a successful program will require most, if not actually all, of the following:

I. REGULATORY POWERS

Local governments have the authority to regulate development. However, most of these regulatory powers have dealt with development and have not been used to the end of preserving open space and physical resources. Some regulatory powers which lend themselves to open space-conservation are:

- Open Space Zoning
- Flood Plain Zoning
- Large Lot Zoning
- Cluster Development
- Site Plan and Architectural Review
- Overlay Zones which control grading, signs, and landscaping
- Setbacks
- Large Planned Unit Developments (PUD) which allows flexibility not afforded to the typical small subdivision.

II. ACQUISITION

Acquisition can be either for fee title or for certain development rights only; that is, purchase of an easement.

FUNDING SOURCES:

A. FEDERAL REVENUE SHARING

Designed to be project oriented, the option is left open to local jurisdictions of the use of their Revenue Sharing funds. A legitimate use for open space acquisition, park development, and environmental enhancement.

B. HUD OPEN SPACE GRANTS

The Department of Housing and Urban Development provides up to 50/50 matching funds for open space acquisition. Applications are judged according to the following priorities:

1. Projects located in low income neighborhoods.
2. "...preservation of the last remnant of open space available in an area..."
3. "...preservation of any natural features which will help to preserve the identity of any given area..."
4. Acquisition of historic sites.
5. Provision of access to various open space opportunities, such as shoreline access.

In addition, HUD does provide up to 100 percent Demonstration Grants for unique projects and techniques.

C. LAND AND WATER CONSERVATION FUND

Fifty/fifty matching funds made available by the Bureau of Outdoor Recreation (Department of the Interior) for acquisition and development for open space-recreation projects. The funds are directed to the more basic rather than elaborate projects.

D. OTHER FUNDING PROGRAMS

A variety of Federal and State matching grants are available for the restoration and maintenance of environmental quality. These include funds from the Environmental Protection Agency for water and waste facilities planning, water quality control measures, and water reclamation projects; the State Wildlife Restoration Fund, administered by the Department of Fish and Game for acquisition and development of significant wildlife areas.

E. TAX SOURCES

Some potential tax sources to fund open space-conservation projects include:

- Sales Tax on sporting goods
- Horse Tax
- Highway Users Tax increase
- Recreational Vehicle License

G. BONDS

People throughout the State have shown increased recent concern for open space and environmental issues, and the voters of many communities have been passing bond issues at general elections.

A State park bond will be placed on the general ballot in June of 1974. If passed by the voters, Mendocino County will be eligible to receive funds for park projects. The State Resources Agency is currently planning project uses for the 1974 bond funds. Mendocino County should make inputs at this time to the State in the form of "wish lists" for expenditure of the funds within the County.

G. GIFTS

Beyond charity as a gift to society, incentives can accompany the giving of land. By the principle of "unlimited deduction" an individual may receive more than tax credit for donations when the donation is to a public agency for open space, park, or recreation purposes.

Another method to encourage the giving of land is the gift-with-life-tenancy approach. An individual gives his land and retains the right to live on the land. Usually accompanying this right, as an incentive, is a release of the individual from paying taxes on the property.

H. FEE SIMPLE

The most commonly used method of acquiring land is buying it outright - buying the fee simple. However, sometimes overlooked are methods to purchase land on an installment basis or purchase with leaseback. The former allows governmental entities to buy land over a period of years. The benefit is that advantage can be taken of low land prices even though government may not desire to spend the full purchase price in any given fiscal year. This situation is particularly prevalent during times of economic recession when land prices are low.

Purchase with leaseback is particularly appropriate with regards to farming. Many people desire to continue farming their land. However, increases in water costs, farm labor costs, machinery costs, and high land taxes often make farming economically unfeasible. Under a purchase-with-leaseback plan, government buys land and leases it back to the farmer at a modest rate.

I. EASEMENTS

Public agencies may elect to acquire just certain rights to

property, rather than the fee simple. For example, a property owner may choose to negotiate a scenic or open space easement on a portion of his property. In exchange for agreeing not to develop that portion of the property, the owner receives lower tax assessments.

IMPLEMENTATION ACTION PROGRAM

The following steps are recommended for implementation of the objectives mentioned in this Plan.

Changes necessary to implement an open space zoning ordinance in accordance with State law consist of increasing the minimum parcel size in the intensive agricultural zone (A-2) to 20 acres from 2 acres. No other changes in the zoning ordinance are necessary to implement the policies of this Plan.

Current County rules and regulations should be enforced. These include the zoning ordinance, the land division ordinance, the Uniform Building Code, and the standards of the Air Pollution Control Board. To assist in this enforcement, State law and County ordinances should be amended to provide that a County has the authority to require that the vendor of any real property furnish the vendee a recorded statement signed under penalty of perjury the extent to which the property being sold has the following: water, sewage, utilities, zoning, General Plan, access, etc.

ZONING CHANGES

An intensive agricultural zone (for example, A-2) should be established on our most productive crop land and should not permit reduction in parcel size below 20 acres. Present programs for implementation of airport clear area zoning and flood plain zoning should be completed as soon as possible.

GENERAL PLAN CHANGES

Develop a Recreation, Noise, Safety, Seismic, and Scenic Highways Element for the County's General Plan. Lands suitable for agricultural production, including timber, rangeland, and crop land, should remain in acreages suitable for production. For prime forest lands, parcels should remain in parcels of at least 20 acres and preferably 80-100 acres.

PROPOSED ORDINANCES

Continue present program for adoption of a noise ordinance. Adopt an ordinance which controls the density and type of development on steeply sloping land. Adopt a sign ordinance. Adopt an ordinance which requires dedication of park land within all future residential subdivisions where desirable.

Consider adoption of grading and cliff setback ordinances. Consider establishing an ordinance which would minimize deleterious environmental impacts and require site rehabilitation for mining operations.

OTHER RECOMMENDATIONS

All minor divisions should be consistent with this Plan. Divisions which create parcels of less than 20 acres should be carefully reviewed in light of impact and use of the land.

All environmental impact reports, both for public and private development, should be reviewed in light of this Plan.

Prior to the disposition of any County-owned surplus property, the Planning Department should review the matter for open space-conservation potential and possible retention in public ownership.

Acquire open space or scenic easements in critical areas.

Conduct a thorough study of the relationship between various taxing methods, total revenues, and land use.

Provide for public access to various lands, including the shoreline and other public areas, by acquiring access easements or fee title where access is crucial.

Freeway agreements entered into by the County should be consistent with this Plan.

Coordinate with the County Museum staff and the County Administrator's office to create an appropriate body to identify, research, and authenticate sites, pursue implementation programs, and pursue State and Federal grants for site study, preservation, and designation.

Begin planning for areas near airports.

Continue present program of planning for solid waste management.

To assure coordination of open space-conservation planning efforts between County departments and agencies, a Council should be established of representatives from Planning, Public Health, Public Works, Agriculture, the Farm Advisor's Office, Resource Conservation District, and other appropriate entities.

Conduct a thorough study of pygmy soils to determine their best use.

BOUNDARIES

Because of the small scale of the maps which accompany this Plan, it is conceivable that questions will arise as to whether or not a given area is actually within or out of the boundary for the various open space uses as delineated by this Plan. When questions arise, the larger scale maps available at the Planning Department should be consulted. If it is still not clear whether or not an area is within a boundary as stipulated by this Plan, a procedure should be followed to make determination. An Environmental Impact Report may be useful in establishing the appropriate classification. Recommendations should be made to the deciding body prior to consideration of the entitlement.

GOALS AND OBJECTIVES

I. CONSERVE OUR NATURAL RESOURCES

1. Identify and conserve lands suitable for prime agricultural production, including timber, various crops, and rangeland. Encourage sustained yield management of forest land. Create buffer zones around intensive agriculture.
2. Identify and conserve rivers, streams, watersheds, coastal areas, harbors, estuaries, reservoirs, potential reservoir sites, and lands adjacent thereto which are especially important for recreation, water supply, fish and shellfish production, or scientific study, or scenic value. Improve stream habitat for anadromous fish.
3. The County should be watchful that its potential future water needs not be compromised by short-sighted regional agreements.
4. Identify and conserve habitats especially important to deer, upland game, furbearers, representative animal communities, and rare and endangered species. Encourage deer herd management.
5. Encourage controlled burning for the improvement of brush ranges for livestock production, enhancement of wildlife habitat, improvement of ground cover for soil and water conservation, and fuel reduction as a vital element in fire prevention.
6. Identify and conserve representative plant communities and rare and endangered species.
7. Identify and conserve areas suitable for production of minerals, geothermal power, gravel, rock, semi-precious stones, natural gas, and oil. Set guidelines for extraction of gravel and rock which will minimize deleterious environmental impacts, maintain equilibrium of river banks, and prevent unsightly scars.
8. Identify and preserve areas of special biological significance for education and scientific research.

II. INCREASE RECREATION OPPORTUNITIES AND ENHANCE CULTURAL WELL-BEING

1. Identify present and potential recreational areas.
2. Provide adequate amounts of recreational areas at appropriate locations throughout the County.
3. Provide for different types of recreation, including rest stops, sporting, hunting, fishing, bicycling, riding, camping, off-road vehicles, water oriented activities, back-packing, and wilderness.
4. Encourage private development of recreational activities and areas.
5. Provide for proper placement of second home recreational subdivisions.
6. Ensure that recreational activities are safe, clean, and compatible with surrounding land uses.
7. Identify valuable scenic areas and set guidelines for development within them.
8. Establish vista areas.
9. Designate scenic State and County roads and highways.
10. Conserve open space along transportation corridors. Discourage strip development.
11. Encourage clustering of all types of development.
12. Coordinate with LAFCO to plan for orderly City limit expansions.
13. Provide linkages between open space areas.
14. Ensure adequate open space in and around existing and planned residential areas.
15. Identify and preserve areas of major historical and archeological significance and continue research on such areas.
16. Encourage private and public research to locate area of historical or archeological importance that are still unidentified.

III. ENSURE THE HEALTH AND SAFETY OF MENDOCINO COUNTY
RESIDENTS AND VISITORS

1. Identify and set guidelines for development of the following areas:
 - a. Areas near airports
 - b. Flood plains
 - c. Areas with steep slopes
 - d. Areas having soil limitations, including high erosion hazard, severe soil pressure variations, severe shrink-swell behavior, and septic system unsuitability.
 - e. Sanitary landfills
 - f. Areas with extreme fire risk
 - g. Areas having geological hazards, including fault zones and other limitations
 - h. Combinations of the above
2. Identify and conserve areas required for protection of water quality.
3. Identify and conserve areas required for the protection and enhancement of air quality.
4. Identify and conserve areas required for attenuation and mitigation of noise pollution.

PART II
ENVIRONMENTAL INVENTORY OF RESOURCES

LAND AREAS AND USES

LAND OWNERSHIP

Mendocino County has a large area of land in private ownership, 79.5 percent, compared with many counties of California where range and woodlands are major characteristics. Some 4.5 percent are State, County, and municipal lands, making a total of 84 percent in non-Federal ownership. This leaves 16 percent in Federal ownership and custody consisting of 7.8 percent National Forest, 6.0 percent Bureau of Land Management, 0.9 percent Indian, and 1.3 percent miscellaneous Federal reserved areas.

These figures are set forth by acres and percent of total land in Table 1.

TABLE 1
LAND OWNERSHIP, MENDOCINO COUNTY

	Acres	Total Land
		Percent
Federal:		
National Forest	174,000	7.8
Bu. Land Management, Dept. of Interior	133,735	6.0
Indian	21,000	.9
Other	30,265	1.3
Total Federal	359,000	16.0
State, County, and Municipal	102,000	4.5
Private	1,785,000	79.5
Total All Land	2,246,000	100.0

Source of Data: U. C. Bulletin, Timber Marketing & Land Ownership in Mendocino County, 1968

Of the land in private ownership, 469,000 acres are owned by wood processing companies. This is 36 percent of the County's total land area.

LAND USES

The uses of land in the County are related to land ownership in a broad sense of the term. Some 3.9 percent are in crops, pasture, and fallow; 15.4 percent are in woodland; 27.0 percent are in range and pasture; and 1.3 percent are in other

uses. These make up what the census calls agricultural lands or land in farms - 47.6 percent of the total area of the County. What remains is 52.4 percent of the total area, classified as not in farms. Table 2 shows the acreage of each of these land use classes.

TABLE 2

AGRICULTURAL LAND USES, MENDOCINO COUNTY, 1960

Land in Farms:	Total Land	
	Acres	Percent
Cropland in crops or fallow	34,732	1.5
Cropland used for pasture	53,524	2.4
Woodland pasture	345,191	15.4
Range and pasture	605,594	27.0
Other land	29,030	1.3
Total Land in Farms	1,068,071	47.6
Total Land Not in Farms	1,176,409	52.4
Total Land Area	2,244,480	100.0

Source of Data: U. S. Census

The foregoing broad use classification does not fully reflect some other important features of the land use pattern, namely the wildlands which can best be delineated in terms of vegetative types. These are set forth in Table 3.

TABLE 3

WILD LAND USES, MENDOCINO COUNTY, 1960**

Major conifer	1,097,000	Acres
Minor conifer	30,000	"
Woodlands (Hardwoods)	112,000	"
Woodlands grass	219,000	"
Woodland-Chaparral	89,000	"
Chaparral	122,000	"
Grass	264,000	"
Bushy Herb	2,000	"
Marsh	*	"
Unclassified	92,000	"
Total	2,027,000	"

*Less than 500 acres

**The following acreages of conifer forest soils occur in the County:

Redwood, 692,000; Douglas Fir, 371,000; Pine, 26,000; and Pine-Douglas Fir, 78,000; or a total of 1,167,000 acres.

Source of Data: Wildlands Soils & Associated
Vegetation of Mendocino County, 1964

At present, the flood plains are intensively cropped where irrigation water is available. The major crops are pears, prunes, walnuts, irrigated pasture, and hay. The terrace soils are mostly not irrigated and are used for vineyards in the interior valleys and for pasture on the coast. Old and second growth timber is being rapidly logged. Many of the grazing lands are depleted or poorly managed. Recreation and hunting are of seasonal importance in these uplands.

GEOLOGY

COASTAL AREA

RUSSIAN RIVER BASIN AREA

The basin contains rocks typically found in the Northern California Coast Ranges. The rocks range in age from Late Jurassic to Recent and are predominantly marine sediments. About 79 percent of the area is underlain by Franciscan rocks or rocks generally associated with the Franciscan. These rocks include the undivided Cretaceous marine sedimentary rocks or coastal belt rocks of the Franciscan formation (K), "typical" Franciscan rocks (KJf), Franciscan volcanic and metavolcanics (KJfv), and ultrabasic rocks, such as serpentinite (ub). The Great Valley sequence comprises about 3 percent of the rocks in the basins and is comprised of Upper (Ku) and Lower (Kl) Cretaceous marine sedimentary rocks. Tertiary marine (Tm) sediments comprise about 2 percent of the rocks; Pliocene and Pliostocene volcanic (QPv) and sedimentary (Qmc) rocks comprise 10 percent; and the remaining 6 percent of the basin is underlain by alluvium (Qal). The extent of these geologic assemblages in the coastal basin is shown in the table "Area of Major Geologic Units."

The Franciscan formation is a heterogeneous mass of sedimentary, volcanic, and metamorphic rocks highly fractured and deformed by folding, faulting, and metamorphism. The formation has been intruded by basic and ultra-basic rocks that are predominantly serpentinitized. The volcanic rocks, which are interbedded with marine sediments, are mostly submarine lava flows that are now largely altered to greenstone. By far the most prevalent rock type in the Franciscan formation is greywacke, a sandstone, which is commonly associated with minor amounts of shale. Chert is also common. The Great Valley sequence, although about the same age as the Franciscan formation, has less volcanic rock and chert and many more fossils; it is also much less structurally deformed and much more regularly bedded.

Tertiary rocks outcrop in an area west of the San Andreas Fault and in small isolated areas near the coast. Generally, the Tertiary rocks are of marine origin and consist of sandstone, siltstone, and conglomerate.

Erodibility of the various broad geologic formations or assemblages is variable and depends upon many factors such as mineralogy, degree of weathering, and structural history.

TABLE 4
AREA OF MAJOR GEOLOGIC UNITS - SOUTHERN BASINS
(SQUARE MILES)

Map Symbol	Geologic Assemblage	River Basin	
		Mendocino Coastal	Russian
Qal	Alluvium	24	130
QMC	Plio-Pleistocene marine and nonmarine sediments	86	166
QPv	Plio-Pleistocene Volcanics	--	87
Tm	Tertiary marine sediments	78	--
K	Undivided Cretaceous marine sediments	1,787	189
Ku, K1	Cretaceous marine sediments	34	56
KJf	Franciscan formation (marine sediments)	69	728
KJFv	Franciscan volcanics and metavolcanics	15	80
ub	Ultrabasic rocks (mostly serpentinite)	5	49
JK	Knoxville formation (marine sediments)	--	--
	Totals	2,098	1,485

Generally, the Franciscan formation is highly unstable, largely because of the presence of both small and very large faults and shear zones often hundreds of feet wide. The deeply weathered Franciscan formation contains shale interbedded with more massive rocks, and serpentinite is common. These inherently weak structural features, combined with high rainfall, prolonged storms, high peak flows, and rugged terrain, account for the widespread instability and erodibility of the Franciscan formation. Consequently, landslides, streambank erosion, and soil creep are common.

EEL RIVER AREA

The Coast Ranges province, which includes the Eel River Basin, extends from near Santa Barbara to the Oregon border and from the Central Valley to the Pacific Ocean. The highest sediment yields for streams of comparable size in the province, and for that matter in the State, are produced by streams draining the Coast Ranges north of San Francisco Bay. The Eel River has the highest average annual sediment

yield per square mile and also has the highest reported yield per square mile of any stream of comparable size in the United States.

The basins contain rocks typical of those found in the northern part of the Coast Ranges province. The rocks range in age from Late Jurassic to Recent and are predominantly marine sediments. About 80 percent of the area is underlain by the Franciscan formation and the rocks generally associated with it. The great Valley sequence comprises about 7 percent, and Tertiary rocks comprise about 5 percent of the area. The remaining 8 percent is underlain by alluvium and terrace deposits. The extent of these geologic assemblages is shown in the table below:

	Area (Square Miles) Eel River Basin
Franciscan formation	3,046
Great Valley sequence	339
Tertiary formations	207
Alluvium and terrace deposits	313
Total	3,905

The Franciscan formation is a heterogeneous mass of sedimentary, volcanic, and metamorphic rocks deformed by folds, faults, and metamorphism. The formation has been intruded by basic and ultrabasic rocks that are predominantly serpentinized, and the volcanic rocks are interbedded with the marine sediments. These volcanic rocks are mostly submarine lava flows that are now largely altered to greenstone. By far the most prevalent rock type in the Franciscan formation is greywacke, a sandstone, which is commonly associated with minor amounts of shale. The Great Valley sequence, although about the same age as the Franciscan formation, has less volcanic rock and chert and many more fossils; it is also much less structurally deformed and much more regularly bedded.

Tertiary rocks crop out in extensive areas south and west of Round Valley in the Middle Fork Subbasin and in small isolated areas around Eureka and the Eel River Delta. Generally, the Tertiary rocks are of marine origin and consist of sandstone, siltstone, and conglomerate. Rocks of younger age also appear in isolated deposits; the most extensive of these occur along the coast from the mouth of the Eel River to Redwood Creek.

Erodibility of the various broad geologic formations or assemblages is variable and depends upon many factors, such

as mineralogy, degree of weathering, and structural history. Generally, the Franciscan formation, which includes about 80 percent of the rocks mapped in the basins, is highly unstable, largely because of the presence of both small and very large faults and shear zones often hundreds of feet wide. The deeply weathered Franciscan formation contains shale interbedded with more massive rocks, and serpentinite is common. These inherently weak structural features, combined with high rainfall, intense storms, high peak flows, and rugged topography, account for the widespread slope instability and erodibility of the Franciscan formation. Consequently, landslides, streambank erosion, and soil creep are prevalent and are the major modes of degradation of the landscape in the Eel River Basins.

MINERALS

The following minerals have been found within the County:

Asbestos	Jade	Nickel
Carbondioxide	Limestone	Petroleum
Chromite	Magnesite	Phosphate
Coal	Manganese	Platinum
Copper	Methane Gas	Quicksilver
Feldspar	Mineral Springs	Sand and Gravel
Gold	Natural Gas	Sulfur

Sand and gravel deposits are found along Davis Creek, Garcia River, Russian River, and Ten Mile River. Seven commercial extraction operations are currently underway: one along Ten Mile River near Route 1, one on Garcia River near Point Arena, two on Davis Creek near Willits, and three along Russian River in the Vicinity of Ukiah.

TOPOGRAPHY

Mendocino County contains 2,246,400 acres or 3,510 square miles. The southern boundary is about 90 miles north of San Francisco. The northern boundary is 80 miles south of Eureka. The measurements are 60 miles west to east and 100 miles north to south.

Mendocino County is bounded on the west by the Pacific Ocean. Near the shore are rocky cliffs, areas of sand dunes, and a few small valleys and strips of coastal terraces with a cover of grasses and forbs. East of these terraces are the hills of the coast range with steep to very steep slopes covered with redwood and Douglas fir. Twenty miles west of Highway 101 the topography is similar, but the vegetation shifts to predominantly grass, oak, and brush. This pattern continues to the eastern County line. The highest elevations are in the mountainous northeastern part of the County. San Hedrin Ridge is 6,900 feet and Anthony Peak is 7,000 feet. In the Russian and Eel River drainages are level flood plains and sloping terraces formed in fault valleys. Round Valley is the largest area of alluvial soil in the County.

MENDOCINO COASTAL AREA

RUSSIAN RIVER BASIN AREA

The principal topographical features of Mendocino Coastal Area are the rugged northwest-southeast trending ridges and valleys. These reflect the geologic structural features of the basin, such as faults, folds, and contacts between formations, all of which have the same general alignment. The San Andreas Fault cuts through the western part of the basin and extends beneath the Pacific Ocean near Point Arena. This fault zone is characterized by a valley along most of its length. The Gualala and Garcia Rivers turn and follow the fault in their lower reaches.

As a consequence of the topography, the general trend of the main streams in the basin is northwest-southeast, and those streams crossing the structural grain of the basin usually do so at right angles, resulting in a rectilinear pattern known as trellis drainage.

Other important topographic features of this basin are the alluvial valleys and the coastline. Most of the irrigable land occurs in the broad alluvial valleys scattered throughout the basin; the most prominent ones are Anderson, Potter,

Redwood, and Ukiah Valleys and the alluvial plains around and along the Russian River. The rugged coastline is noted for its spectacular and relatively unspoiled scenery. Lake Mendocino, a man-made lake in the Russian River Basin, is the only sizeable impoundment.

EEL RIVER BASIN AREA

The principal topographical features of the Eel River Basin are the rugged northwest-southeast trending ridges and canyons. Maximum elevations are found along the eastern boundary and range from about 4,500 to 7,500 feet. Black Butte and Anthony Peak are prominent mountains with elevations of more than 6,500 feet. Although the North Fork, Middle Fork, and main stem of the Eel River flow south to southeast in their upper reaches, they eventually cross the structural grain of the basin and join in a northwest course toward the Pacific Ocean. Many of the smaller tributaries start out in a similar manner. The resulting trellis drainage pattern reflects the marked geologic control of the stream courses.

Gently sloping terraces ranging from 100 to 700 feet in elevation are found a few miles inland from the coast. Three relatively flat valleys (Laytonville, Willits, and Round Valley) are located in the mountainous part of the basins.

CLIMATE

Mendocino County has moist cool winters and warm dry summers. Maximum temperatures range from a record high of 114°F at Ukiah to a high of 90°F at Fort Bragg. The lowest recorded minimum was 7°F at Covelo. The record low on the coast was 24°F. Rainfall ranges from an average of 80 inches in the northwest part of the County to 35 inches in the southeastern part. Maximum precipitation occurs in December, January, and February. The average growing season is about 260 days on the coast, 210 in the interior valleys, and 180 days in Round Valley (2).

MENDOCINO COASTAL AREA

The climate of the Mendocino Coast Area is characterized by cool summers and cold, rainy, and snowy winters. Precipitation varies from 38 inches annually along the coastline to 70 inches annually in the mountains on the eastern area boundary and 80 inches in areas along the northeastern section of the boundary. The mean annual precipitation for the entire coastal area is approximately 50 inches. More than 97 percent of the total precipitation occurs in an eight month period beginning in October and ending in May. The other four months of the year average less than one inch per month, with August being least of all with only 0.01 of an inch. Inland, a substantial portion of the precipitation occurs as snowfall. Table 5 shows the mean annual precipitation at selected stations within and immediately adjacent to the Mendocino Coast Area. In Table 5, "mean" is the arithmetic mean or average.

TABLE 5

MEAN ANNUAL PRECIPITATION AT SELECTED STATIONS IN OR NEAR MENDOCINO COASTAL AREA

Station	Elevation (in feet)	Mean Annual Precipitation* (in inches)	Period of Record
Branscomb	2,000	81.07	1900-1923
Fort Bragg	80	37.65	1895-1959

*Mean period 1905-1955. "Mean period" is a period which is believed to represent conditions of water supply and climate over a long period of time.

Temperatures in the Coastal Area are influenced by elevation, distance from the ocean, and the coast range, which separates the drainage area from inland areas. The average annual temperatures and average length of growing season for two representative stations are shown in Table 6. The temperatures presented are the arithmetic means of the daily minimum and maximum temperatures and the extreme minimum and maximum temperatures in degrees Fahrenheit for the indicated period of record. The length of frost free period in Table 6 represents the average period, in days, between the last day in spring and the first day in fall when the minimum daily temperature fell below 32 degrees Fahrenheit.

TABLE 6

RECORDED TEMPERATURES AT SELECTED STATIONS
IN OR NEAR MENDOCINO COASTAL AREA

	Elev.	Mean* Temp.		Extreme*Temp.		Average* Length of Frost Free Period in	Period of Record
	in ft.	in ° F Min.	Max.	in ° F Min.	Max.	Days	
Branscomb	2,000	39.5	67.0	16	104	173	1900-1923
Fort Bragg	80	44.2	60.8	24	90	-	1931-1952

*Based on period of record.

RUSSIAN RIVER BASIN AREA

The climate of the Russian River Basin Area is characterized by cold rainy winters and dry hot summers, with the summer heat tempered by the ocean near the coast. The mean annual precipitation for the unit is 44 inches. The unit has a well established climatology station network. There are 43 stations, several with records that date back to 1877. Climatic data for 6 of these stations having records for both precipitation and temperature beginning prior to 1930 are presented in Table 7.

The rainy season extends from October through May, and the growing season begins in April and ends in October. June has a slight amount of rainfall, less than one inch, while July, August, and September are virtually dry. The wettest months are December and January, with December rainfall averaging over eight inches. Rainfall distribution in the valley area generally varies from 40 inches in the main part to a low of 30 inches in the extreme southern portion. With increase

TABLE 7

CLIMATIC DATA AT SELECTED STATIONS IN OR NEAR RUSSIAN RIVER BASIN AREA

Station	Elevation	Mean Annual Precipitation in Inches <u>a/</u>	Mean Annual Temperatures in ° F <u>b/</u>		Extreme Temperatures in ° F		Average Frost-free Period (in days)	Period of Record
			Min.	Max.	Min.	Max.		
Potter Valley Powerhouse	1,015	42.07 <u>c/</u>	-	-	14	111	-	1911-1959
Ukiah	623	35.54	42.5	73.9	12	114	-	1877-1959
Cloverdale	360	38.23	45.6	74.0	19	113	263	1877-1959

a/ Based on 1905-55 period of record

b/ Based on total period of record

c/ Based on 1911-55 period of record

in elevation, the precipitation increases and averages 50 inches in the foothills and mountains surrounding the valley. The highest intensity of rainfall occurs in the Mayacmas Mountains. In parts of this area the annual precipitation is 80 inches. At lower elevations in the mountain ranges surrounding the valley, modest amounts of precipitation occur as snow. An annual precipitation of 60 to 70 inches occurs in several other mountain areas in the area.

The mean annual temperature in the valley areas is 58°F ranging from a mean of 47°F for January to a mean of 80°F for July. As can be expected, the portion of the area nearest the coast has a mean annual temperature 5°F cooler than the interior.

The coastal area also has fewer fluctuations from the mean. The temperatures presented in Table 7 are the arithmetic means of the daily minimum and maximum temperatures and the extreme minimum and maximum temperatures in degrees Fahrenheit for the indicated period of record. The length of average frost-free period in Table 7 for two representative stations represents the average period, in days, between the last day in spring and the first day in fall when the minimum daily temperature falls below 32°F.

EEL RIVER BASIN AREA

A wide variation of climate occurs within the 1,624 square mile area of the Eel River Basin Area. Moderate seasons are typical of the northern coastal section; and variable, generally more severe seasons are common to the inland valleys. In the coastal area the predominant influence on the climate is the moist air mass over and near the ocean. This air mass, and the overcast or fog generally associated with it due to the onshore winds, has a great moderating effect on the climate of the coastal area. The inland portion of the area, which is more removed from this oceanic influence, is comparatively free from this moderating effect. This inland area is subject to a wider range of temperature variation, both daily and seasonal, than the coastal area.

Average annual precipitation within the area varies from about 38 inches per year at Clovelo to about 51 inches per year at Willits. About 86 percent of the average seasonal precipitation occurs between November 1 and April 30. In the vicinity of the coast, there is generally a measurable amount of precipitation in every month of the year, while rainfall during the summer months is somewhat of a rarity in the inland valleys. At Dos Rios, for example, rainfall has

been recorded during the months of July or August in only nine of the 40 years that the precipitation gage has been in operation. Average snowfall at precipitation stations within the area varies from less than one inch on the coastal plains to about 55 inches at Bridgeville, the northeast corner of Mendocino near Anthony Peak. The average lowest elevation at which there is snow on the ground on April 1 is about 4,000 feet.

Maximum and minimum recorded seasonal precipitation and estimates of the 50 year mean seasonal precipitation at selected stations within or adjacent to the Eel River Basin Area are shown in Table 8. The extremes shown are the highest and lowest seasonal precipitations observed during the period of record indicated for each station. The 50 year mean seasonal values are estimates, except the recorded quantities shown for the Ukiah Station, of the average depth of rainfall which would have been observed at these stations if they had been active during the base period 1905-06 through 1954-55. It is considered that these mean values are representative of the long-term mean seasonal precipitation available to the unit.

TABLE 8
RECORDED EXTREME AND ESTIMATED MEAN
SEASONAL PRECIPITATION AT SELECTED STATIONS IN
OR NEAR EEL RIVER BASIN AREA
(In Inches)

Station	Elevation (in feet)	Annual Precipitation		Estimated 50 Year Mean	Years of Record Used
		Maximum	Minimum		
Branscomb	2,000	132.62 (1903-04)	46.12 (1919-20)	76.81	1901-1923 1933-1955
Covelo	1,390	72.60 (1937-38)	16.66 (1923-24)	38.18	1883-1895 1915-1925 1936-1939 1944-1960
Dos Rios	927	90.07 (1957-58)	17.79 (1923-24)	45.09	1921-1960
Willits	1,365	97.16 (1957-58)	18.55 (1923-24)	50.61	1912-1946
Ukiah	623	60.48 (1889-90)	16.19 (1923-24)	35.06	1878-1960

The climate of the Eel River Basin Area is generally illustrated by the temperature data presented in Table 9. These data, with the exception of the frost-free period values, were taken from the "Climatic Summary of the United States - Supplement for 1931 through 1952," Bulletin W, published by the U. S. Weather Bureau. The values for the frost-free period were derived by the Department of Water Resources and represent the average period between the last day in spring and the first day in fall when the minimum temperature fell below 32°F.

TABLE 9

TEMPERATURE DATA AT SELECTED STATIONS
IN OR NEAR EEL RIVER BASIN AREA
(In Degrees Fahrenheit)

Station	Elev. (in ft.)	Avg. Temperature			Extreme Temperature		Average Daily Variation	Frost- free Period (in days)
		Jan.	July	Annual	High	Low		
Covelo	1,390	40.0	74.6	56.4	111	7	32.3	168
Fort Bragg	80	47.5	56.6	52.9	90	24	16.6	277
Potter								
Valley P.H.	1,014	44.9	73.4	58.4	111	14	32.4	---
Ukiah	623	45.1	72.4	57.9	114	12	31.7	211

SOILS

There are 21 different soil groups that have been mapped for Mendocino County. These are named for the major soil series that occur within each unit. A soil series is a group of soils that have about the same kind of profile or sequence of layers. Except for a difference in surface texture, all members of a soil series have major horizons or layers that are similar in thickness, arrangement, and other important characteristics. Some soil areas that have been mapped have the same soil series for which they are named, but differ by properties or qualities of major importance to use and management. These are separated (or phased) by indicating differences such as slope, surface texture, or depth of soil. (See Table of Soil Characteristics.)

The soil series names are tentative and may be changed when the soils of the Mendocino Area are correlated into the National Soil Classification System. Any changes in names will not affect the usefulness of the series because the soil properties and qualities do not change and the names are only a means of identifying the soil group.

The 21 soil groups for Mendocino County are organized into 7 major groups based on soil characteristics and qualities, including slope. The seven major groups and the soil types within each group are described below. (Please refer to Mendocino County Township Map, Scale 1" = 2 miles, which reflects these groups in color. The map is to be found in the Mendocino County Planning Director's office.)

Group 1 - Areas dominated by very deep, nearly level, well to poorly drained soils.

CM-CU	Clear Lake-Cole Association
MR-ZM	Maywood-Zamora Association

Group 2 - Areas dominated by deep, gently sloping to steep, moderately well to well drained, medium to strongly acid soils.

AA-Rs-AC	Arcata-Rohnerville Association, 0 to 9 percent slopes
Mz-Ct-F	Mendocino-Empire-Casper Association, 30 to 50 percent slopes

Group 3 - Areas dominated by shallow to deep, nearly level to moderately steep, well to somewhat poorly drained soils.

Ny-Ek-AE Noyo-Empire Association,
0 to 30 percent slopes

Group 4 - Areas dominated by moderately deep to deep, well drained, gently sloping to very steep soils.

HF-Jp-AE Hugo-Josephine Association,
0 to 30 percent slopes

HF-Jp-F Hugo-Josephine Association,
30 to 50 percent slopes

Pu-Ta-AC Pinole-Talmage Association,
0 to 9 percent slopes

Group 5 - Areas dominated by very shallow to moderately deep, well to excessively drained, gravelly or stony soils on gentle to very steep slopes.

Hj-AF Henneke Association,
0 to 50 percent slopes

Group 6 - Areas dominated by moderately deep, sloping to steep, somewhat poorly drained soils on unstable geological formations.

Yr-EF Yorkville Association,
15 to 50 percent slopes

Group 7 - Areas dominated by miscellaneous land types.

AZ-RW Alluvial land-Riverwash Association

TABLE 10

SOIL CHARACTERISTICS AND QUALITIES

CS-77
REV. 1966

SURVEY AREA or WORKING MAP Mendocino County General Soil Map

Date February 1967

Prepared by L. R. Piontkowski

Sheet 1 of 3

Map Symbol	Soil Name	Position	Profile (dry)			Natural Drainage	Subsoil Perm.	Runoff	Erosion Hazard	Effective Depth (inches)	AWC ^{1/} (inches)	Inherent Fertility	Present Land Use
			Surface Layer	Subsoil	Substratum or Parent Material								
GROUP 1 - OH-CU	AREAS DOMINATED BY VERY DEEP, Clear Lake-Cole association	NEARLY LEVEL, WELL TO POORLY Alluvial fans and flood plains	WELL TO MODERATELY DRAINIED SOILS										
	Clear Lake		Black clay, slightly acid	Olive brown and yellowish brown clay, moderately alkaline	Olive brown and yellowish brown clay, moderately alkaline	Poorly	Slow to very slow	Slow	Slight	60+	8 to 10	Moderate	Pasture
	Cole		Grayish brown loam, medium acid	Dark gray, mottled, sandy clay, medium acid	Dark gray, mottled, sandy clay, medium acid	Somewhat poorly	Moderate to slow	Slow	Slight	60+	7 to 9	Moderate	Pasture
Mr-Zm	Maywood-Zumora association	Flood plains											
	Maywood		Brownish gray very fine sandy loam, medium acid	Grayish brown very fine sandy loam, medium acid	Brown silty loam, medium acid	Well	Moderately rapid	Slow	Slight	60+	7.5 to 11.5	High	Cropland
	Zumora		Brownish gray silty loam, medium acid	Grayish brown silty loam, slightly acid	Brown silty clay loam, slightly acid	Well to moderately well	Moderate to moderately slow	Slow	Slight	60+	7 to 10.5	High	Cropland
GROUP 2 - AA-Rh-AC	AREAS DOMINATED BY DEEP, GENTLY SLOPING TO STEEP, MODERATELY DRAINIED SOILS	Coastal terraces	WELL TO MODERATELY DRAINIED SOILS										
	Arbuckle		Dark brown loam, medium acid	Dark brown clay loam, strongly acid	Brown gravelly sandy loam, medium acid	Well	Moderately rapid	Slow	Slight	30 to 60	6 to 9	Low	Pasture
	Rohnerville		Grayish brown loam, medium acid	Yellowish brown clay, medium acid	Yellowish brown clay, medium acid	Moderately well to well	Moderate over slow	Slow	Slight	30 to 60	4 to 9	Low	Pasture
Mz-Ct-AE	Mendocino-Empire-Caspar association, 0 to 30 percent slopes	Uplands and coastal plains											
	Mendocino		Dark grayish brown loam, medium acid	Yellowish red clay, medium acid	Soft sedimentary rock	Moderately well	Moderate to mod. slow	Slow to medium	Slight to moderate	36+	7 to 10	Moderate	Woodland
	Empire		Brown sandy loam, medium acid	Yellowish brown clay loam, strongly acid	Soft sedimentary rock	Well	Moderate to mod. slow	Slow to medium	Slight to moderate	36+	3.5 to 11	Moderate to low	Woodland
	Caspar		Grayish brown sandy loam, strongly acid	Yellowish brown sandy clay loam, very strongly acid	Soft sedimentary rock	Moderately well	Mod. rapid over mod. slow	Medium	Slight to moderate	36+	7 to 9	Moderate	Woodland
Mz-Ct-F	Mendocino-Empire-Caspar association, 30 to 50 percent slopes	Uplands											
	Mendocino		Dark grayish brown loam, medium acid	Yellowish red clay, medium acid	Soft sedimentary rock	Moderately well	Moderate to mod. slow	Medium	Moderate to high	36+	7 to 10	Moderate	Woodland
	Empire		Brown sandy loam, medium acid	Yellowish brown clay loam, strongly acid	Soft sedimentary rock	Well	Moderate to mod. slow	Medium	Moderate to high	36+	3.5 to 11	Moderate	Woodland
	Caspar		Grayish brown sandy loam, strongly acid	Yellowish brown sandy clay loam, very strongly acid	Soft sedimentary rock	Moderately well	Mod. rapid over mod. slow	Medium	Moderate to high	36+	7 to 9	Moderate	Woodland
GROUP 3 - Ny-Ek-AE	AREAS DOMINATED BY SHALLOW TO DEEP, NEARLY LEVEL TO MODERATELY SLOPING, MODERATELY DRAINIED SOILS	Coastal plains and terraces											
	Noyo		Gray sandy loam, very strongly acid	Weakly cemented sandy clay loam, strongly acid	Sandstone rock, strongly acid	Somewhat poorly	Slow	Slow to medium	Slight to moderate	18 to 36	2 to 6	Low	Woodland
	Empire		Brown sandy loam, medium acid	Yellowish brown clay loam, strongly acid	Soft sandstone rock	Well	Moderate to mod. slow	Slow to medium	Slight to moderate	36 to 60	3.5 to 11	Moderate to low	Pasture
GROUP 4 - Hf-Jp-AE	AREAS DOMINATED BY MODERATELY DEEP TO DEEP, WELL DRAINIED, GENTLY SLOPING TO VERY STEEP SOILS	Uplands											
	Hugo		Brown loam, medium acid	Yellowish brown loam, strongly acid	Sandstone rock	Well	Moderate	Slow to medium	Slight to moderate	20+	3.5 to 11	Moderate	Woodland

^{1/} M-3070 Total available water holding capacity within effective soil depth

TABLE 10

SOIL CHARACTERISTICS AND QUALITIES

CS-77
REV 1-66

SURVEY AREA or EXTENT: Mendocino County General Soil Map

Date: February 1967

Prepared by: L. R. Piontkowski

Sheet 3 of 3

Map Symbol	Soil Name	Position	Profile (dry)			Natural Drainage	Subsoil Perm	Runoff	Erosion Hazard	Effective Depth (inches)	AWC (inches)	Inherent Fertility	Present Land Use
			Surface Layer	Subsoil	Substratum or Parent Material								
SYMBOL 5 - HJ-AP	Mostly dominated by very shallow, Henneke association, 0 to 50 percent slopes	Uplands	TO MODERATELY DEEP, WELL TO EXCESSIVELY DRAINED, GRAVELLY OR STONY SOILS ON C	EXCESSIVELY DRAINED, GRAVELLY OR STONY SOILS ON C	TO VERY STEEP SLOPES								
	Henneke		Dark brown very gravelly loam, slightly acid	Dark brown very gravelly clay loam, neutral	Serpentine rock	Well	Moderately rapid	Medium to rapid	Moderate to high	5 to 20	1 to 3	Very low	Range Wildlife
Mq-LE-BD	Maymen-Los Gatos association, 10 to 75 percent slopes	Uplands											
	Maymen		Brown gravelly loam, medium acid	Yellowish brown gravelly loam, strongly acid	Sandstone rock	Somewhat excessively	Moderately rapid	Medium to rapid	Moderate to high	5 to 20	1 to 3	Very low	Range Wildlife
	Los Gatos		Brown gravelly loam, slightly acid	Reddish brown gravelly clay loam, medium acid	Sandstone rock	Well	Moderate over mod. slow	Medium to rapid	Moderate to high	20 to 30	2 to 5	Low	Range Wildlife
TI-RO-Ma	Tillabally-Rock land association, 10 to 75 percent slopes, eroded	Uplands											
	Tillabally		Grayish brown gravelly loam, strongly acid	Brownish gray stony very gravelly loam, strongly acid	Bedrock	Excessive ly	Rapid	Rapid	Moderate to high	5 to 20	1 to 3	Low	Woodland Range
	Rock land		Shallow soil materials and rock outcrop	Shallow soil materials and rock outcrop	Bedrock	Excessive ly	Rapid	Rapid	Moderate to high	--	--	Very low	Wildlife
SP-Ma-F-2	Shastan-Masterson association, 30 to 60 percent slopes, eroded	Uplands											
	Shastan		Dark grayish brown gravelly loam, medium acid	Brown gravelly loam, strongly acid	Sandstone rock	Somewhat excessively	Moderate	Medium	High	20+	2 to 6	Moderate	Woodland
	Masterson		Dark brown gravelly loam, strongly acid	Dark brown gravelly loam, strongly acid	Sandstone rock	Well	Moderately rapid	Medium	High	20+	2 to 6	Moderate	Woodland
SYMBOL 6 - Yr-RV	Mostly dominated by moderately deep, Yorkville association, 10 to 60 percent slopes	Uplands	TO MODERATELY DEEP, SOMEWHAT POORLY DRAINED SOILS	IN UNSTABLE GEOLOGICAL FORMATIONS									
	Yorkville		Grayish brown clay loam, neutral	Dark gray clay, mildly alkaline	Metamorphosed basic rock	Mod. well or somewhat poorly	Moderate over slow	Slow to medium	Moderate to high	20 to 30	3.5 to 9	Moderate	Range
SYMBOL 7 - AL-RW	Mostly dominated by alluvial land-Riverwash association	LAND TYPES: flood plains and stream channels											
	Alluvial land		Gravelly, sandy or cobble, overwash material	Gravel, sand or cobble strata	Gravel or sand strata with lenses of finer materials	Excessive ly	Rapid	Slow	Moderate	10+	2 to 6	Low	Pasture Idle Cropland
	Riverwash		Gravel or sand	Gravel, sand or cobbles	Gravel or sand or cobbles	Excessive ly	Rapid	Slow	High	None	1 to 2.5	Very low	Gravel Source
DL-ba	Dune land-Beaches association	Coastal beach and sand dunes											
	Dune land		Gray medium and coarse sands	Gray medium and coarse sands	None	Excessive ly	Very rapid	Slow	High	60+	2 to 3	Very low	Recreation Wildlife
	Beaches		Gray medium and coarse sands	Gray medium and coarse sands	None	Excessive ly	Very rapid	Slow	High	60+	2 to 3	Very low	Recreation Wildlife

TABLE 10

SOIL CHARACTERISTICS AND QUALITIES

CP-77
REV. 7-64SURVEY AREA or WETA/MDT Mendocino County General Soil MapDate February 1967Prepared by L. R. PiontkowskiSheet 2 of 3

Map Symbol	Soil Name	Position	Profile (dry)			Natural Drainage	Subsoil Perm	Runoff	Erosion Hazard	Effective Depth (inches)	A.W.C. (inches)	Inherent Fertility	Present Land Use
			Surface Layer	Subsoil	Substratum or Parent Material								
	Josephine		Brown loam, medium acid	Yellowish red clay loam, strongly acid	Sandstone rock	Well	Moderate to mod. slow	Slow to medium	Slight to moderate	20+	3.5 to 11	Moderate	Woodland
HF-Jp-F	Josephine association, 10 to 25 percent slopes	Uplands											
	Hugo		Brown loam, medium acid	Yellowish brown loam, strongly acid	Sandstone rock	Well	Moderate	Medium	Moderate to high	20+	3.5 to 11	Moderate	Woodland
	Josephine		Brown loam, medium acid	Yellowish red clay loam, strongly acid	Sandstone rock	Well	Moderate to mod. slow	Medium	Moderate to high	20+	3.5 to 11	Moderate	Woodland
HF-Jp-0	Josephine association, 10 to 25 percent slopes	Uplands											
	Hugo		Brown loam, medium acid	Yellowish brown loam, strongly acid	Sandstone rock	Well	Moderate	Rapid	High	20+	3.5 to 11	Moderate	Woodland
	Josephine		Brown loam, medium acid	Yellowish red clay loam, strongly acid	Sandstone rock	Well	Moderate to mod. slow	Rapid	High	20+	3.5 to 11	Moderate	Woodland
HF-Jp-F	Josephine association, 30 to 75 percent slopes, eroded	Uplands											
	Hugo		Brown loam, medium acid	Yellowish brown loam, strongly acid	Sandstone rock	Well	Moderate	Rapid	High	20+	3.5 to 11	Moderate	Woodland
	Lagunita		Grayish brown loam, medium acid	Grayish brown loam, medium acid	Sandstone rock	Well	Moderately rapid	Rapid	High	10 to 36	2 to 4	Low	Range
	Josephine		Brown loam, medium acid	Yellowish red clay loam, strongly acid	Sandstone rock	Well	Moderately slow	Rapid	High	20+	3.5 to 9	Moderate	Woodland
Ln-L-F-AF	Lagunita-Los Osos association, 0 to 40 percent slopes	Uplands											
	Lagunita		Grayish brown loam, medium acid	Grayish brown loam, medium acid	Sandstone rock	Well	Moderately rapid	Slow to medium	Slight to moderate	20 to 36	2 to 5	Low	Range
	Los Osos		Dark brown clay loam, medium acid	Dark brown clay, slightly acid	Sandstone rock	Well	Moderately slow over slow	Slow to medium	Slight to moderate	36+	5 to 8	Moderate	Range
Ln-L-F	Lagunita-Los Osos association, 30 to 50 percent slopes	Uplands											
	Lagunita		Grayish brown loam, medium acid	Grayish brown loam, medium acid	Sandstone rock	Well	Moderately rapid	Medium	Moderate	20 to 36	2 to 5	Low	Range
	Los Osos		Dark brown clay loam, medium acid	Dark brown clay, slightly acid	Sandstone rock	Well	Moderately slow over slow	Medium	Moderate	36+	5 to 8	Moderate	Range
Ln-L-F-w	Lagunita-Los Osos association, 50 to 75 percent slopes	Uplands											
	Lagunita		Grayish brown loam, medium acid	Grayish brown loam, medium acid	Sandstone rock	Well	Moderately rapid	Rapid	High	20 to 36	2 to 5	Low	Range
	Los Osos		Dark brown clay loam, medium acid	Dark brown clay, slightly acid	Sandstone rock	Well	Moderately slow over slow	Rapid	High	36+	5 to 8	Moderate	Range
Fu-Ta-AC	Pinnole-Talmage association, 0 to 5 percent slopes	Alluvial fans and terraces											
	Pinnole		Brown gravelly loam, strongly acid	Brown clay loam, medium acid	Yellowish brown very gravelly sandy loam, strongly acid	Well	Moderate to mod. rapid	Slow to medium	Slight	36 to 60	5.5 to 10	Moderate	Vineyard
	Talmage		Grayish brown gravelly sandy loam, slightly acid	Brown very gravelly coarse sandy loam, slightly acid	Yellowish brown gravelly coarse loamy sand, slightly acid	Somewhat excessive	Rapid	Slow	Slight	20 to 36	4 to 6	Moderate to low	Vineyard

AGRICULTURAL LAND CAPABILITY

Land capability classification, by the USDA Soil Conservation Service, Agricultural Handbook No. 210, is a grouping of soils made primarily for agricultural purposes, but is not designed for definitive classification of timber and range production potentials. Soils and climate are considered together as they influence use, management, and production.

The classification contains two general divisions: (1) land suited for cultivation and other uses and (2) land limited in use and generally not suited for cultivation. Each of these broad divisions has four classes, each designated by a roman numeral that reflects increasing hazards and limitations in land use. Class I has few or no hazards or limitations in agricultural use, whereas Class VIII has many. The classes are described below.

Capability classes are divided into subclasses that reflect the principal kinds of limitations: "e" for erosion, "w" for wetness, "s" for soil, and "c" for climate.

LAND CAPABILITY CLASSIFICATION

Land Suited for Cultivation and Other Uses

- | | |
|-----------|---|
| Class I | Soils in Class I have few or no limitations or hazards. They may be used safely for cultivated crops, pasture, grazing, production of forest products, recreation, or wildlife. |
| Class II | Soils in Class II have few limitations or hazards. Simple conservation practices are needed when cultivated. They are suited to cultivated crops, pasture, grazing, production of forest products, recreation, or wildlife. |
| Class III | Soils in Class III have more limitations and hazards than those in Class II and require more difficult or complex conservation practices when cultivated. They are suited to crops, pasture, grazing, production of forest products, recreation, or wildlife. |
| Class IV | Soils in Class IV have greater limitations and hazards than Class III and still more difficult or complex measures are needed |

when cultivated. They are suited to cultivated crops, pasture, grazing, production of forest products, recreation, or wildlife.

Land Limited in Use; Generally not Suited for Cultivation

- Class V Soils in Class V have little or no erosion hazard but have other limitations that prevent normal tillage for cultivated crops. They are suited to pasture, production of forest products, grazing, recreation, or wildlife.
- Class VI Soils in Class VI have severe limitations or hazards that make them generally unsuited for cultivation. They are suited largely to pasture, grazing, production of forest products, recreation, or wildlife.
- Class VII Soils in Class VII have very severe limitations or hazards that make them generally unsuited for cultivation. They are suited to grazing, production of forest products, recreation, or wildlife.
- Class VIII Soils and land forms in Class VIII have limitations and hazards that prevent their use for cultivated crops, pasture, grazing, or the production of forest products. They may be used for recreation, wildlife, or water supply.

Erosion hazard describes the susceptibility of the soil to erosion by water or wind under specified conditions. In general, the risk of erosion depends upon the land slope, the texture and structure of the soil, the type and amount of vegetal cover, and the amount of runoff; slope is a dominant factor. In this report the erosion hazard is an estimate of the degree of water erosion to be expected if all of the protective vegetal cover is removed. The classes used in rating water erosion hazard for bare soil are determined by the following slope intervals:

<u>Erosion Hazard Class</u> (Rating)	<u>Slope Interval</u> (Percent)
Low	0 to 9
Moderate	9 to 30
High	30 to 50
Very High	Over 50

A brief description of each of the capability units follows:

Capability Unit IIe1 - Deep to very deep, well drained, moderately coarse to medium textured soils on gentle slopes.

The soils in this unit are deep (over 36 inches) with slight to moderate profile development and gentle slopes of 2 to 5 percent. Textures are sandy loams or loams. Roots and water penetrate these soils easily. The reaction is usually in the slightly acid range although occasionally the soils may be medium acid (pH 5.6 to 6.0). Available moisture ranges from about 6.5 inches to 8.5 inches for the 60 inch depth of soil.

Capability Unit IIe4 - Deep, well drained, gravelly soils on gentle slopes.

These soils occur on fans and low terraces and are more than 36 inches deep. Most have gravelly loam surface textures and subsoils are gravelly clay loams. Lower subsoils may be very gravelly. The soils are well drained, moderately permeable, and have total available moisture holding capacities of about 7 inches. Increased moisture capacity in the clay loam subsoils usually is offset by increased graveliness of the lower subsoils. Reaction is strongly acid (pH 5 to 6) and natural fertility is moderate. Slopes range from 2 to 9 percent and erosion may be moderate.

Capability Unit IIw1 - Very deep, well drained, moderately coarse to moderately fine textured soils on nearly level slopes that are subject to occasional overflow.

These are well drained, permeable soils that are deeper than 5 feet. On the average, damaging overflow occurs about once in 10 years. Textures are sandy loams, loams, and clay loams; and total available water capacity to a depth of 5 feet is about 7.5 to 11 inches. The soils have favorable structures and are easy to work. Reaction ranges from medium acid to neutral (pH 5.6 to 7.3).

Capability Unit IIw2 - Deep to very deep, moderately well to somewhat poorly drained, medium textured soils on nearly level to gentle slopes.

Soils of this unit have a common problem of drainage. A water table may be present within 3 to 5 feet of the surface during some years or during the late winter and early spring. Soil depths are over 36 inches and normally the subsoil or lower profile is moderately permeable to roots and water.

Surface textures range from sandy loam to light clay loams and soil reaction ranges from medium acid to slightly acid (pH 5.6 to 6.5). Total available moisture based on the drained profile ranges from 6.5 to 10.5 inches. Slopes are commonly less than 2 percent and the soils occur on flood plains.

Capability Unit IIIe3 - Moderately deep to deep, fine or medium textured soils with very slowly permeable subsoils or substrata.

These soils have loam surface textures and clay subsoils. They are underlain at depths of 12 to 36 inches by very slowly permeable sediments or by bedrock. Total available moisture capacity is about 2 to 10.5 inches and some additional slowly available moisture is extracted from the subsoils and substrata by perennial plants. Slopes range from 0 to 16 percent and some areas are wet. Erosion may be severe on areas that are unprotected over winter. Soil reaction is medium acid to very strongly acid (pH 5 to 6).

Capability Unit IIIe4 - Very deep, somewhat excessively drained coarse textured soils on nearly level to moderate slopes.

Soils in this unit include coarse textured or very gravelly soils that occur near streams. They are rapidly permeable and droughty. Some of the very gravelly soils are underlain by gravel substrata. Total available moisture is about 4 to 6 inches and ranges from about 0.8 to 1 inch per foot. Slopes may range from 0 to 9 percent. Soil reaction is neutral to slightly acid (pH 6.5 to 7.0) and the soils are naturally low in fertility.

Capability Unit IIIw5 - Very deep, fine textured, imperfectly drained soils on gentle slopes.

This unit consists of clay textured soils that are more than 20 inches deep. The soils have available moisture capacities of about 8 to 10 inches. Subsoils are slowly permeable. Surface soils are slightly acid (pH 5.1 to 6.5) and the soils are somewhat poorly drained. Slopes range from 0 to 5 percent.

Capability Unit IVe1 - Deep to moderately deep, moderately coarse to moderately fine textured, well drained, strongly sloping to moderately steep soils.

The soils of this unit consist mostly of loams and silt loams,

20 to 60 inches in depth resting on weathered, shattered, permeable bedrock of shale or sandstone material. Soils more resistant to erosion occur on slopes of 16 to 31 percent and the more erodible soils are on slopes of 9 to 16 percent. The latter are mostly relatively coarse textured soils over sandstone rock. The average water content varies from 1.25 to 2.25 inches per foot of soil. Total available moisture is about 3.5 to 11 inches. Most of the soils are strongly acid to slightly acid (pH 5.1 to 6.5) and acidity increases with depth. These are upland soils on strongly sloping to moderately steep slopes.

Capability Unit IVe3 - Shallow to moderately deep, moderately coarse or medium textured soils with very slowly permeable subsoils or substrata.

These soils have sandy loam or loam surface textures and silty clay loam subsoils. They are underlain at depths of 12 to 36 inches by very slowly permeable sediments or by bedrock. Total available moisture capacity is about 2 to 6 inches and some additional slowly available moisture is extracted from the subsoils and substrata by perennial plants. Slopes range from 0 to 16 percent and some areas are wet. Erosion may be severe on areas that are unprotected over winter. Soil reaction is medium acid to very strongly acid (pH 5 to 6).

Capability Unit IVe5 - Moderately deep to deep, moderately fine to fine textured soils on moderately steep slopes.

Soils of this capability unit are characterized by clay loam to clay textured soils on rounded hill slopes of 16 to 31 percent. Soil depths range from about 30 to 48 inches. The soils are well drained despite fine textures and roots may readily penetrate all the soil. Available water holding capacity ranges from around 5 to 8.5 inches and moisture per foot of soil is relatively high. Soil reaction ranges from medium acid to slightly acid (pH 5.6 to 6.5).

Capability Unit IVe8 - Shallow to moderately deep, moderately coarse to medium textured soils over bedrock on gently sloping moderately to steep uplands.

Soils in this capability unit are mostly loams, 15 to 30 inches deep to bedrock. These soils are well drained and the total available moisture ranges from about 2.5 to 5.0 inches. Soil reaction is slightly to medium acid (pH 5.6 to 6.5) and usually the trend is to become slightly less acid in the subsoil. Slope extremes range from 3 to

30 percent. These soils are used for range and in many places are over-grazed and consequently erosion becomes a problem.

Capability Unit VIe1 - Deep to moderately deep, moderately coarse to medium textured soils on moderately steep to steep slopes.

Soils in this capability unit range from 20 to 60 inches in depth. They are well to moderately well drained. Textures range from sandy loams to light clay loams and are moderately permeable. The average water content varies from about 1.25 to 2 inches per foot of soil. Total available moisture is about 3.5 to 10 inches. Soils more resistant to erosion occur on slopes of 31 to 51 percent, and the more erodible soils are on slopes of 16 to 31 percent. The latter may be relatively more coarse textured over sandstone rock. Erosion is the major hazard in the use of these lands. These upland soils are on moderately steep to steep slopes. Soil reaction is strongly acid to neutral (pH 5.1 to 7.0) and they become increasingly acid with increasing depth. The underlying parent materials are sandstone or shale rock.

Capability Unit VIe3 - Moderately coarse to moderately fine textured soils with slowly permeable claypan subsoils on rolling to steep slopes.

Soils in this capability unit normally have claypan or other slowly permeable subsoils at depths of 18 to 40 inches. Surface textures range from sandy loam to light clay loams and subsoils are clay textures. Most of these soils are subject to land slips because of water saturation above the clay layer during the rainy season. Total available moisture may range from 3.5 to 9 inches and slowly available moisture is supplied by the subsoil. Soil reaction ranges from strongly acid to slightly acid (pH 5.3 to 6.5) in the surface and strongly acid to basic in the subsoil. This is upland rangeland or forest land on rolling to steep slopes (15 to 50 percent). The susceptibility to land slips and gully erosion made this land generally unsuited for cultivation. Many areas of the Yorkville soils have been over-grazed but this apparently has no connection with the problem of land slips.

Capability Unit VIe5 - Moderately deep, or deep, moderately fine textured upland soils on moderately steep or steep slopes.

Soils in this unit have clay loam surface soils and usually have clay loam subsoils. They overlie sandstone or shale

bedrock at depths ranging from about 2 to 5 feet. Available moisture capacities range from about 2 to 8 inches and permeabilities are moderately slow or slow. The more erodible soils have slopes of 16 to 31 percent and the less erodible soils have slopes of 16 to 51 percent. The soils are well drained and reaction usually is strongly to slightly acid in the surface and strongly acid in the subsoil.

Capability Unit VIe8 - Shallow to moderately deep, moderately coarse to medium textured soils over bedrock on rolling to steep uplands.

Soils in this capability unit are mostly loams, 15 to 30 inches deep to bedrock. These soils are well drained and the total available moisture ranges from about 2 to 5 inches. Soil reaction is slightly to medium acid (pH 5.6 to 6.5) and usually the trend is to become slightly less acid in the subsoil. Slope extremes range from 9 to 51 percent but most of it is in the 31 to 51 percent range.

Capability Unit VIIe1 - Moderately deep to deep, medium to moderately coarse textured soils on steep to very steep slopes.

Soils in this capability unit are 20 to 60 inches in depth and rest on slowly permeable fractured bedrock. Some of the soils contain a high percentage of rock fragments throughout the profile. Internal drainage is moderate to moderately rapid. Textures range from medium to moderately coarse. Erosion hazards are moderate, due to the steep to very steep slopes. Soil reaction is usually strongly acid but ranges from pH 5.1 to 7.0 and usually becomes increasingly acid with increasing depth. Parent materials are sandstone or shale rock.

Capability Unit VIIe4 - Shallow or moderately deep, well drained upland forested soils on very steep slopes.

This unit includes well drained, stony and rocky upland soils in mountainous areas. They generally are shallow or moderately deep to bedrock. Available moisture capacity is about 2 to 6 inches and intake rates usually are rapid. Slopes range from 15 to 50 or more percent and runoff may be very rapid where the timber cover has been destroyed. Erosion may be severe. Vegetation consists of coniferous forests and brush and rates of timber growth are medium to slow. The soils are best suited to growing timber.

Capability Unit VIIe5 - Moderately deep and deep, moderately

fine textured upland soils on very steep slopes.

Soils in this unit have clay loam or clay surface soils and usually have clay loam subsoils. They overlie sandstone, shale or metamorphic bedrock at depths ranging from about 2 to 5 feet. Available moisture capacities range from about 2 to 8 inches and permeabilities are moderately slow or slow. Slopes range from 50 to 75 percent. The soils are well drained and reaction usually is medium acid (pH 5.6 to 6.0).

Capability Unit VIIc8 - Very shallow to moderately deep, moderately coarse to medium textured soils on very steep slopes.

Soils in this capability unit are mostly loams, 8 to 30 inches deep over bedrock. The soils are well to excessively drained and the total available moisture ranges from around 1.2 to 5 inches. Soil reaction is slightly to medium acid (pH 5.6 to 6.5) and the usual trend is to become slightly less acid in the subsoil. Slopes are very steep, ranging from 51 to 76 percent. This unit is very similar to capability unit VIc8 except the slopes are steeper and grazing animals have more difficulty in getting over this land. These soils are used for range.

Capability Unit VIIs4 - Well drained, rocky, stony and gravelly upland forested soils.

Most of these soils occur on relatively gentle slopes. All have low water holding capacities of about 2 to 5 inches. The soils absorb water rapidly unless the vegetation cover is destroyed. Runoff is slow and erosion is slight. Surface soil textures are rocky, gravelly, sandy loams and loams and subsoils usually are similar. Underlying bedrock is granite, basalt, metamorphic or sedimentary formations. Vegetation is coniferous forest and brush. Rate of timber growth is medium.

Capability Unit VIIs9 - Shallow, rocky, moderately fine and fine textured, moderately steep to steep upland soils on serpentine bedrock.

This unit consists of stony or rocky soils with loam textures. They are about 10 to 20 inches deep to serpentine or peridotite bedrock. The soils are well drained and have water holding capacities of about 2 to 3 inches. Slopes range from 5 to 51 percent and runoff is rapid, but erosion usually is not severe because of rock and stone on the surface. Soil

reaction is slightly acid to mildly alkaline (pH 6.5 to 7.8). These soils are used for range. Production of forage is low because of rockiness and low fertility. Vegetation consists of brush, digger pine, shrubs, and grass. Scattered annual and perennial grasses are found on these soils.

Capability Unit VIIw4 - Coarse sandy, gravelly or stony alluvial soils subject to frequent overflow, stream erosion and deposition.

The soils in this capability unit are usually coarse sands, or gravelly sands. They are often wet or subject to overflow during the winter or spring. Channel alignment or streambank protection are often necessary to protect adjacent areas.

Capability Unit VIIc4 - Very deep, coarse textured dune land subject to wind erosion.

Soil materials in this unit consist of wind blown sand on dune land. The soil reaction varies from medium acid to mildly alkaline (pH 5.6 to 7.8). Recreation is the major use for these lands.

Capability Unit VIIIs8 - Shallow and very shallow, steep, rocky and eroded uplands.

This unit consists of rough, mountainous brush covered areas not suited for agricultural use. Slopes usually are steep but range from 10 to 75 percent. Rock outcrops are frequent, soils usually are less than 10 inches deep, and erosion is moderate or severe. Soils of this unit are used for watershed, wildlife, and recreation. Fire control and maintenance of proper cover are the most important problems in the protection of downstream lands and reservoirs and for improvement of watershed yields.

Capability Unit VIIw4 - Very deep, very coarse, sandy, gravelly or stony soils subject to frequent overflow and deposition.

Soils in this capability unit are barren, sandy, gravelly or stony deposits in stream channels and on coastal beaches. Some areas are subject to frequent overflow and deposition. Coastal beaches are subject to constant wind and wave action. These areas are suited for recreation, wildlife, and gravel sources.

AGRICULTURAL LANDS

In a report prepared by the Mendocino County Staff Land Use Committee, it was recommended that land classified good to superior be zoned for agriculture and be entitled to receive agricultural preserve status. This land includes prime forests, prime range and prime bottom land, and makes up three-fourths of the total land area of the County as indicated cated in Table 11.

TABLE 11

DISTRIBUTION OF LAND ACCORDING TO AGRICULTURAL CHARACTERISTICS

Good to Superior Land:

Prime Forest	1,159,000 acres	51.6%
Prime Range	415,000	18.4
Prime Bottom Land	74,541	3.3
*Unclassified	37,295	1.7
TOTAL	<u>1,685,836 acres</u>	<u>75.0%</u>

Poor Agricultural or Forest Land:

Forest	61,000 acres	2.7%
Range	199,000	8.9
*Unclassified	81,164	3.6
TOTAL	<u>341,164 acres</u>	<u>15.2%</u>

Mendocino National Forest	<u>219,000 acres</u>	<u>9.8%</u>
COUNTY TOTAL	<u>2,246,000 acres</u>	<u>100.0%</u>

The Land Conservation Act (Agricultural Preserves) recognizes Classes I and II soils as prime agricultural soils. However, Mendocino County has an abundance of Classes III and IV soils which are used for, and well suited to, the raising of wine grapes and apples. A majority of the acreage devoted to the wine grape is Class III soils. For this reason, Class III soils have been included in the "prime" category as shown in Table 12.

*Unclassified lands include valley lands which have not been rated for range production, small valleys which have not been mapped, waterways, urban areas, highways, etc.

TABLE 12

PRIME AGRICULTURAL LAND

<u>Area</u>	<u>Class I</u>	<u>Class II</u>	<u>Class III</u>	<u>Total</u>	<u>% of Total Land Area</u>
Anderson Valley	0	2,390	1,695	4,085	.18
Coastal Plain	0	3,929	8,846	12,775	.57
Hopland Area	345	4,640	2,650	7,635	.34
Little Lake Valley	555	3,945	2,737	7,237	.32
Potter Valley	615	4,875	1,965	7,455	.33
Redwood Valley	450	3,693	3,525	7,668	.34
Round Valley	850	5,950	7,360	14,160	.63
Ukiah Valley	1,576	7,482	2,319	11,377	.51
Laytonville	73	1,268	808	2,149	.10
TOTAL	4,464	38,172	31,905	74,541	3.32

Also included in lands which are classified as conifer soils are lands which have high to medium timber producing capability. These lands amount to 1,159,000 acres, or 51.6 percent of the total land area of the County.

Prime rangelands include soils classified as grass, oak-grass, and other soils which have a high potential of producing feed. These prime rangelands comprise 416,000 acres, or 18.4 percent of the total land area.

The total acreage recommended by the Staff Land Use Committee as being entitled for Agricultural Preserve Status is 1,685,836, or 75 percent of the total land area of the County. Currently, 964,029 acres are included in Agricultural preserves.

VEGETAL COVER TYPES

The delineations used on the Vegetal Cover Map (on hand at Mendocino County Planning Department) were developed from information from the Timber Stands and Soil-Vegetation Maps prepared by the Pacific Southwest Forest and Range Experiment Station and are defined as follows:

Coniferous forest is composed of several cover types, the most important of which are redwood, redwood-Douglas-fir, mixed conifer (mainly Douglas-fir, true firs, and sugar and ponderosa pine), and pure ponderosa pine. Respectively each lies further from the coast and each receives progressively less precipitation. Minor conifer species, such as Sitka spruce, various cypresses, Port Orford cedar, coast and mountain hemlock, lowland fir, incense cedar, canoe cedar, juniper, and Bishop and knobcone pine, are found in various locations, depending mostly upon soil-moisture relationships. Broadleaf trees, typical of which are tan oak, alder, madrone, and toyon, grow interspersed in patches throughout the conifer stands. Ferns, rhododendron, azalea, salal, thimbleberry, huckleberry, and other shrubs often form a rather luxuriant undergrowth in forests near the coast while, inland, both species and density of underbrush vary widely.

Woodland, as used here, is a collective term for broadleaf trees and includes both deciduous and evergreen species. California black oak, Oregon oak, alder, dogwood, Oregon ash, bigleaf maple, and buckeye are the most common of the deciduous species, while tan oak, live oak, madrone, bay, and toyon are the most representative of the evergreens. Typically, evergreens predominate near the coast, and in the inland mountainous zones deciduous trees are most prevalent. Poison oak, manzanita, various Ceanothus, scrub forms of various oaks, currant, raspberry, blackberry, annual grasses, and forbs form the understory.

The grass type is made up of a variety of herbaceous species, predominantly annuals. Typical herbaceous species are oat grasses, various bromes, wild barleys, fescues, wild oats, filarce, Medusahead, and burclover.

The woodland-grass type is a combination of the two types described in the immediately preceding paragraphs. In parts of the study area, mostly in the Southern Basins, much of the landscape is savannah covered by low annuals with an occasional large single tree or scattered groups of trees. California black oak and live oak are the most common trees;

vegetation in the open areas is grass and other herbaceous annuals.

The brush type, called chaparral, consists of species that range in height from three to twelve feet, generally with rigid branchlets and thorny projections. These often form dense thickets that are virtually impenetrable to all but birds and rodents. Along the coast, blueblossom Ceanothus, rhododendron, and azalea are the most common species and, in the spring, these present brilliant wildflower displays. Inland chaparral usually occupies seasonally hot sites, and typical species are manzanita, various Ceanothus, chamise, scrub deciduous and live oaks, pioson oak, baccharis, and Yerba Santa. On the more xeric timber sites, the shrub species tend to encroach on timber sites that have been burned or logged. Pure stands of a single species are common, and individual scattered digger pine occur in fringe areas that adjoin conifer or woodland types.

Cropland includes both irrigated and non-irrigated land and is located mostly in the river valleys scattered throughout the study area. The non-irrigated and much of the irrigated lands are generally used for hay production and pasture and are covered mainly by grasses. The other irrigated areas support orchards, vineyards, and grain and row crops.

The remaining land, shown in the "Other" category, is a combination of types that support little or no vegetal cover. Barren areas occur on mountain tops, rocky and sandy coastline, rock outcrops, and similar sites where soil and climate conditions limit vegetal growth. Some of the most spectacular scenery is in this category. Water-surface areas include lakes and reservoirs. Urban and industrial areas usually support considerable vegetation, but it is often different from the original natural cover.

TIMBER PRODUCTION AND SITES

TIMBER PRODUCTION

The timber industry developed with the settlement of California's North Coast and quickly became the most important industry and accounts for most of the income and employment. The industry prospered during the gold rush and the resultant development of the Bay Area which placed a demand on Mendocino County's lumber. In the 1860's and 1870's, Mendocino County became the leading California lumber producing County. Most of the early timber harvest was simply an exploitation of the resource with little regard for the future, and much of the land in small ownerships continues to be managed that way. Recently, some private owners, particularly those holding large acreages, have shifted to sustained yield management, similar to a type of management long used on national forest timberlands.

While timber harvests have declined since the mid-1950's, the lumber industry remains an important segment of the County's economy. In 1968, 35 percent of all employment was in the lumber industry. About 3 percent of the commercial timberland acreage is logged each year, including the harvest of sawlogs and poles and products of thinning operations. Production per acre is generally superior to other timbered areas in the State.

About 200 square miles of timberland have been converted to grass for grazing. Recently, the number of new conversions has decreased, and some previously converted acres are being allowed to revert to timber.

Of the County's 2,246,000 acre area, 1,304,000 acres, or 58 percent, is unreserved commercial forest land.

TIMBER SITES

The inherent productive capacity of different kinds of timberland depends upon the combined effects of the soils and climate peculiar to them. The concept of the "woodland site" is used to express these differences.

Woodland sites are kinds of timberland that differ from one another in their ability to produce significantly different kinds or amounts of conifer vegetation.

The Upland Soils Map for Mendocino County, 1951, contains

several classifications of soil series depicting the soil types and depth of soil in that class. One classification, namely "Soils normally associated with commercial conifer forest types, rated generally as high and intermediate sites for conifer timber, and low and intermediate for grass." The soil series included in this classification are Butte, Comptche, Hugo, Melbourne, Josephine; sites Usal, Tatu, Mendocino, Caspar, and Empire. The extent of this soil classification generally locates the more productive timber growing areas in the County. This area totals approximately 1,159,000 acres or 51.6 percent of the total County area. A more detailed timber site location map could be made utilizing the following site descriptions as found on the Soil-Vegetation Maps, 15 minute quad series.

DOUGLAS-FIR SITE CLASS II

This site is capable of supporting a good growth of Douglas-fir. Redwood also does well where it is climatically adopted. This site grows 1,400 board feet per year between 30 and 80 years of age when the stand is fully stocked.

DOUGLAS-FIR SITE CLASS III

This site is capable of supporting a fair growth of Douglas-fir (sometimes redwood) timber. This site grows 914 board feet per acre per year between the ages of 30 and 80 when the stand is fully stocked.

PONDEROSA PINE SITE 2

This site will produce a stand of Ponderosa pine but the growth rate is slow. This site grows 100 board feet per acre per year between the ages of 20 and 100 when the stand is fully stocked.

PONDEROSA PINE SITE 5

This is a good Ponderosa pine site. This site grows 450 board feet per acre per year between the ages of 20 and 100 when the stand is fully stocked.

TABLE 13
FOREST AREA

Commercial Forests	1,304,000 acres
Productive Reserved Forests	6,000
Unproductive Forests	<u>469,000</u>
TOTAL	1,779,000 acres

TABLE 14
OWNERSHIP-COMMERCIAL FOREST LAND

Public:	
National Forest	107,000 acres
Bureau of Land Management	44,000
Indian	13,000
State	<u>41,000</u>
TOTAL PUBLIC	205,000 acres
Private:	
Forest Industry	469,000 acres
Other	<u>630,000</u>
TOTAL PRIVATE	1,099,000 acres
TOTAL	1,304,000 acres

TABLE 15

AREA OF COMMERCIAL FOREST LAND BY
FOREST TYPE AND OWNERSHIP CLASS

<u>Forest Type</u>	<u>All Ownerships</u>	<u>National Forest</u>	<u>Other Public</u>	<u>Forest Industry</u>	<u>Other Private</u>
Douglas-Fir	228,000	45,000	8,000	93,000	82,000
Redwood	295,000	-	28,000	160,000	107,000
True Firs	33,000	28,000	-	-	5,000
Ponderosa Pine	27,000	18,000	-	4,000	5,000
Bishop Pine	19,000	-	-	-	19,000
Lodgepole Pine	5,000	-	-	-	5,000
Incense Cedar	5,000	-	-	-	5,000
Red Alder	9,000	-	-	5,000	4,000
Calif. Black Oak	58,000	10,000	7,000	-	41,000
Oregon White Oak	50,000	1,000	-	13,000	36,000
Pacific Madrone	90,000	-	6,000	19,000	65,000
Tanoak	374,000	-	32,000	156,000	186,000
Other Hardwoods	90,000	3,000	17,000	19,000	51,000
Non-Stocked	<u>21,000</u>	<u>2,000</u>	<u>-</u>	<u>-</u>	<u>19,000</u>
TOTAL	1,304,000	107,000	98,000	469,000	630,000

HYDROLOGY

The water resources of Mendocino County arise in and the surface runoff is disposed of through three major drainage basins having the following sizes and acre-feet of natural surface water runoff.

TABLE 16

RUNOFF OF MENDOCINO COUNTY DRAINAGE BASINS

	<u>Coastal River Basins</u>	<u>Russian River Basin</u>	<u>Eel River Basin</u>	<u>Totals</u>
Square Miles	1,600	1,500	3,600	6,700
Acre- Feet Run- off	2,103,600	1,688,900	6,298,400	10,090,900

However, about 68 percent of the historical flow of the East Fork Russian River originates in the Upper Eel watershed and is diverted from Van Arsdale Reservoir on the Eel River, through the P. G. & E. Company's Potter Valley Tunnel and Powerhouse, and into the East Fork. The East Fork Russian River, with the diversion from the Eel, contributes about 16 percent of the total runoff from the Russian River Basin.

Since 1958, the total runoff of the East Fork has been controlled by Coyote Dam and Lake Mendocino. The upper reaches of the main stem of the Eel River are stored in P. G. & E.'s Lake Pillsbury which has 86,000 acre-feet of usable storage capacity. This P. G. & E. facility diverts 140,000 acre-feet annually into the Russian River Basin for power and irrigation purposes.

The surface water quality of each of the three river basins is generally good to excellent, characterized by low concentrations of total dissolved minerals, boron, and calcium-magnesium carbonates. Boron occurs in harmful concentrations in certain local drainage areas overlying fault zones in the older Franciscan formation. These zones transmit boron and other chemicals in hot solutions.

The ground water resources of the County occur in three principal types of aquifers present in the coastal terraces and valleys and in the inland valley alluvium, older terraces, and the ancient Franciscan formation. Here are the groundwater storage capacities of the combined water-bearing units of the Coastal, Russian, and Eel River Basins.

TABLE 17

WATER RESOURCES OF MENDOCINO COUNTY DRAINAGE BASINS

	<u>Coastal Basins</u>	<u>Russian River Basin</u>	<u>Eel River Basin</u>	<u>Total</u>
Area (Acres)	53,500	11,500	105,000	170,000
Usable Capacity (Ac.-Feet)	217,000	64,000	342,600	623,600

Groundwater quality and yield of wells are much more variable than in the case of surface waters due mainly to the variable thickness, porosity, specific yield, and mineral constituents of the aquifer. The vast majority of wells recorded with the State are very low producers except in the younger alluvium adjacent to and underlying the stream and river channels. In a few places such as Round Valley, ground water occurs under artesian pressures. And in many alluvial aquifers, the supply of ground water varies seasonably according to the rainfall and runoff conditions.

The existing water projects in the County consist of some 300 surface water diversions, nine small dams and reservoirs, Lake Mendocino of 122,500 AF capacity, and many small stock watering ponds. The diversions are listed here by basins:

TABLE 18

WATER DIVERSIONS BY MENDOCINO COUNTY DRAINAGE BASINS

<u>Basin</u>	<u>Number of Diversions</u>	<u>Quantity Diverted</u>
Coastal	110	30,000 AF/Year
Russian	140	6,000 AF/Year
Eel	60	170,000 AF/Year

The number of ground water wells probably exceeds 4,000, but many are not recorded with the State. They are estimated to withdraw some 5,000 acre-feet per year.

There are quite a large number of water service agencies in the County. These are listed below along with the service area, acres of irrigated cropland, and number of urban service connections.

TABLE 19
WATER AND SEWER SERVICE
AGENCIES
IN MENDOCINO COUNTY

<u>Name of Water Agency</u>	<u>Service Area</u>	<u>Acres of Irrigated Cropland</u>	<u>Number of Urban Services</u>
<u>Municipal Water- Works</u>			
Fort Bragg Municip- pal Water Dept.	Ft. Bragg		1,800
Ukiah Municipal Water Dept.	Ukiah		3,331
<u>Commercial Water Companies</u>			
Brown's Water Works	Albion		22
Laytonville Water Co.	Laytonville		100
North Gualala Water Co.	Gualala		225
Pacific Gas & Electric Co.	Willits		1,560
Point Arena Water Works	Point Arena		137
Rogina Water Company	Talmage	4	520
<u>Incorporated Mutual Water Companies</u>			
Dos Rios Mutual Water Corp.	Dos Rios		23

TABLE 19 - Continued

<u>Name of Water Agency</u>	<u>Service Area</u>	<u>Acres of Irrigated Cropland</u>	<u>Number of Urban Services</u>
<u>County Water Districts</u>			
Calpella County Water District	Calpella		71
Elk County Water District	Elk		65
Laytonville County Water Dist.	Laytonville		Inactive
Leggett County Water District	Leggett		Inactive
Redwood Valley Co. Water Dist.	Redwood Valley		-
Little Lake Co. Water District	Willits		-
Round Valley Co. Water District	Covelo		Inactive
Millview County Water District	Ukiah		535
Willow County Water District	Ukiah		655
<u>County Water Works Districts</u>			
Mendocino County Waterworks Dist.2	Anchor Bay		26
<u>Flood Control & Water Conservation Districts</u>			
Mendocino County Flood Control and Water Conservation District	Ukiah	12,358	
<u>Irrigation Districts</u>			
Potter Valley Irrig. Dist.	Potter Valley	1,500	

TABLE 19 - Continued

<u>Name of Water Agency</u>	<u>Service Area</u>	<u>Acres of Irrigated Cropland</u>	<u>Number of Urban Services</u>
<u>Public Utility Districts</u>			
Hopland Public Utility Dist.	Hopland		150
<u>Miscellaneous Water Service Agencies</u>			
Brooktrails Resort Improvement Dist.	Brooktrails		35
Pacific Reefs Water District	Albion		-
Anderson Valley Community Services Dist.	Boonville & Philo		-
Irish Beach Water Dist.	Irish Beach		9
City of Fort Bragg	Fort Bragg		1,500
City of Point Arena	Point Arena		160
City of Ukiah	Ukiah		2,750
City of Willits	Willits		1,400
Calpella County Water Dist.	Calpella		71
Covelo Community Services Dist.	Covelo		140
Ukiah Valley Sanitation Dist.	Ukiah		1,000
County Services Area No. 2	Rogina Heights & Talmage		-
Anderson Valley Community Ser- vices Dist.	Boonville & Philo		-
Mendocino State Hospital	Talmage		-

FISH AND WILDLIFE

FISH

The lakes, rivers, and streams of Mendocino County abound with a variety of game and non-game fishes. These include, but are not limited to, king salmon, silver salmon, steelhead, shad, sturgeon, lamprey eel, rainbow trout, brown trout, large and small mouth black bass, crappie, green sunfish, bluegill, striped bass, carp, hitch, suckers, and squafish.

King salmon, silver salmon, and steelhead are the most sought after and most valuable game fish. Their use is an essential part of the recreation and commercial fishery industries. The income from these sources is exceeded only by lumbering and agriculture. Clean, coarse gravels are essential for reproduction of these fish. This is a resource that is plentiful in all three major drainage basins of the County under present undeveloped conditions.

Mendocino County has approximately 954; 1,352; and 2,423 miles of habitat used by king salmon, silver salmon, and steelhead, respectively. King salmon are found throughout the main stream and larger tributaries of the Eel River, as well as the Russian River. Silver salmon are distributed throughout a large portion of the Eel River System, as well as the Russian River. They inhabit numerous smaller coastal streams. Steelhead inhabit almost every stream in the County. The following is a summary of king salmon, silver salmon, and steelhead population sizes and habitat in the larger drainage basins of the County.

EEL RIVER BASIN

The Eel River has a very large annual runoff and is one of California's most important anadromous fish streams. It ranks second in silver salmon and steelhead production, third in king salmon production. It has an estimated annual average run of 69,000 king salmon, 30,000 silver salmon, and 115,000 steelhead.

There are 802 miles of king salmon, 894 miles of silver salmon, and 1,269 miles of steelhead habitat in the entire Eel River drainage. Of the California coastal river systems, the Eel ranks first in amount of silver salmon habitat and second in amount of king salmon and steelhead habitat.

Problems which have damaged the river system and have diminished fish runs center around improper logging practices. Diversion of waters to the Russian River and construction of the Scott Dam have also caused reduced fish runs.

A fish ladder and counting and propagation facility are maintained at Cape Horn Dam.

RUSSIAN RIVER BASIN

The Russian River drains about 1,500 square miles of watershed lands. Steelhead are the most important sport fish in the river and are distributed throughout the main tributaries. The river system has 102 miles of king salmon, 133 miles of silver salmon, and 661 miles of steelhead habitat. The river ranks third in California in steelhead production. An average of 50,000 steelhead, 5,000 silver salmon, and 500 king salmon are said to spawn annually in the system.

Problems along the river are not as great as other river systems. However, potential damage is ever present due to channelization, over-grazing, poor land practices, and a growing suburban population.

COASTAL RIVER BASINS

Ten Mile River enters the ocean about nine miles north of Fort Bragg. There are 103 miles of silver salmon and steelhead habitat in the drainage system, having an annual spawn of some 6,000 silver salmon and 9,000 steelhead.

The Noyo River drains about 100 square miles and enters the ocean at Fort Bragg. There are 83 miles of silver salmon and steelhead habitat in the drainage system. Some 6,000 silver salmon, 8,000 steelhead, and less than 50 king salmon use the drainage annually.

Big River empties into the ocean eight miles south of Fort Bragg. It has 101 miles of silver salmon and 137 miles of steelhead habitat and an estimated run of 6,000 silver salmon and 12,000 steelhead.

The Navarro River drains an area of about 300 square miles with four tributaries: the North Fork, Rancheria, Anderson, and Indian Creeks. There are 130 miles of silver salmon and 185 miles of steelhead habitat in the drainage. Some 7,000 silver salmon and 16,000 steelhead spawn annually in the drainage system.

The Garcia River system drains 100 square miles and enters the ocean near Point Arena. It has 38 miles of silver salmon and 41 miles of steelhead habitat and 2,000 silver salmon and 4,000 steelhead spawn annually in this drainage.

In all of the above mentioned river systems, severe damage has resulted from poor logging practices.

Mendocino County, one of the largest and least populated coastal counties, provides a great opportunity for sport fishing. The Eel River supports the second largest sport fishery in Northwestern California, exceeded only by the Klamath-Trinity River system. Fishing for king salmon and steelhead is best during the fall and early winter. The Middle Fork provides a good summer and early fall fishery for spring; summer and fall run steelhead. The South Fork receives most of the angling pressure in the drainage. Anglers concentrate at numerous access points along the stream up to Benbow Dam.

Some 8,600 and 32,200 angler-days per year are spent fishing for salmon and steelhead, respectively, in the Eel River drainage. Approximately 26 percent of its king salmon, 25 percent of its silver salmon, and 23 percent of its steelhead habitat are accessible to the angler.

Little is known about the Russian River sport fishery despite its importance as a sport fishing river. It is estimated that approximately 70,000 angler-days per year are spent fishing for salmon and steelhead.

The salmon and steelhead that use the streams in Mendocino County spend a majority of their lives in the ocean. Most of the salmon catch is at sea; however, very few steelhead are caught in the ocean. The marine salmon catch is both commercial and sport. Ocean fishing activities are centered at Fort Bragg, although fishing is done along the Mendocino Coast from landings at Shelter Cove, Albion, and Point Arena. The average commercial salmon catch from 1959 through 1963 at these landings was 1,094,805 pounds with an average value of \$553,557. The average annual salmon sport catch at these landings was 6,800 fish. Other species commonly landed are sole, tuna, rock fish, and crab, as shown in Table 20.

Wildlife habitat in the County fall into five broad classifications:

1. The redwood belt extends along the coast in a strip

TABLE 20

AVERAGE ANNUAL COMMERCIAL LANDINGS
1959-1963

Dover Sole	1,298,000 lbs.
Salmon	1,095,000
Albacore Tuna	918,000
Rock Fish	667,000
Crab	436,000
TOTAL	<u>4,414,000 lbs.</u>

about 35 miles wide, ranging in elevation from sea level to 2,000 feet. Redwoods are found in association with Douglas fir, except on valley flats where the redwood stands are essentially pure.

2. The Douglas fir forest is located inland and at elevations above the redwood belt but below 4,500 feet. Douglas fir is also common in places near the coast where it is in association with redwoods and tanbark oak.
3. Ponderosa pine forests are scattered at higher elevations from the crest of the Coast Range eastward. Other conifers of the pine forest are red and white fir.
4. The woodland grass association is found interior at elevations generally below or intermixed with the Ponderosa pine forests.
5. Chaparral occupies much of the foothills. Chaparral includes chamois, buck brush, western mountain mahogany, scrub oak, and species of manzanita.

Wildlife species are grouped into five categories so as to relate them to their habitats, namely, big game, upland game, furbearers and predators, waterfowl, and other wildlife.

1. Big Game - The Columbian black-tailed deer is the most abundant big game animal in Mendocino County. Coastal deer herds are non-migratory and use the same ranges all year. Migrations occur between the higher summer ranges and the lower winter ranges.

Winter deer ranges are located along streams below the 4,000 foot level in glade areas. Reduction of these narrow strips is a threat to migratory deer.

While deer do create serious problems in the agricultural areas by their night feedings on crops, they do act as a stimulus to the attraction of hunters. Hunting clubs have been established through the County. Mendocino is a lead County in numbers of deer taken.

2. Upland Game - Blue grouse inhabit the Douglas fir forests. California quail are widespread, preferring brushy stream bottoms and cut-over areas of the Eel River Basin.

The County is a good quail producing area, but quail hunting is limited by posting of private lands and by lack of vegetative cover. Small populations of ring-necked pheasants inhabit Round Valley. Band-tailed pigeons are widely distributed throughout the area. They inhabit the Ponderosa pine and oak association in the mountains.

Mourning doves occur in the woodland grassland areas except at the higher elevations and in the coastal belt. They tend to concentrate in the Round Valley-Covelo area.

3. Furbearers and Predators - The County supports a variety of furbearers. Mink and muskrat are the more commercially important ones. Ring-tailed cats, gray foxes, coyotes, and bobcats are present in variable numbers but are lightly harvested. Martens, otters, and king fish are found in small numbers. Raccoons, weasels, badgers, spotted skunks, and striped skunks are common.
4. Waterfowl - A variety of waterfowl are attracted to the County by the many rivers, streams, lakes, and ponds.
5. Other Wildlife - Sea lions and seals are common along the coast and even whales are seen at certain times of the year. Islands and large rocks are inhabited or visited by harbor seals, sea lions, and several species of birds including puffins, gulls, auklets, murres, murrelets, albatross, shearwaters, petrels, pelicans, and cormorants.

A variety of habitats attract a diversity of non-game birds, including the brown pelican, southern brown

eagle (both are endangered species), paragon falcon, osprey, pileated wood peckers, and a heron rookery exists near the mouth of the Russian River. Wild turkeys, while not native to the area, have been released in the Cloverdale area and are present in small numbers. Wild turkeys also exist in the northern portion of the County.

TABLE 12

MENDOCINO COUNTY WILDLIFE RESOURCES

WILDLIFE HABITAT		WILDLIFE USE	
<u>Habitat Description</u>	<u>Amount (Acres)</u>	<u>Species</u>	<u>Average Annual Hunter Days</u>
Pine-fir-chaparral	200,000	Deer	111,725
Agriculture	35,795	Black Bear	450
Grassland	297,425	Quail	7,800
Chaparral	163,000	Pheasant	800
Woodland-grass	239,020	Pigeons	8,700
Coastal forest	339,150	Rabbits	500
Woodland-chaparral	99,000	Doves	3,900
Urban-industrial	9,500	Squirrels	8,750
Barren	22,300	Ducks	3,300
Lakes-bays-reservoirs	5,960	Geese	50
Hardwood	133,000	Furbearers	1,500
Riparian	400	Non-game Species	10,000
Minor Conifers	<u>31,000</u>		<u> </u>
TOTALS	1,575,550		157,475

RARE AND ENDANGERED SPECIES

The California Fish and Game Commission has declared a number of animals to be either rare or endangered. The following species have been found within Mendocino County or its off-shore waters:

Endangered:

California Brown Pelican - *Pelecanus occidentalis californicus*

Southern Bald Eagle - *Haliaeetus laucocephalus leucociphalus*

American Peregrine Falcon - *Falco peregrinus anatum*

Blue Whale - *Balaenoptera musculus*

Humpback Whale - *Megaptera novaengliae*

Pacific Right Whale - *Balaena glacialis japonica*

California Clapper Rail - *Rallus longirostris obsoletus*

Rare:

California Yellow-Billed Cuckoo - *Coccyzus americanus occidentalis*

Gray Whale - *Eschrichtius gibbosus*

The following is a list of fish and wildlife species which are found in Mendocino County. The common name is followed by the scientific name:

A. BIG GAME

1. Columbian Black-tailed Deer - *Odocoileus hemionus columbianus*

2. Roosevelt Elk - *Cervus canadensis roosevelti*

3. Northwestern Black Bear - *Euarctos americanus altifrontalis*

4. Mountain Lio - *Felis concolor*

5. Feral Pig

B. UPLAND GAME

1. Ring-necked Pheasant - *Phasianus colchicus*
2. California Quail - *Lophortyx californicus*
3. Mountain Quail - *Oreortyx pictus*
4. Blue Grouse - *Dendragapus obscurus*
5. Turkey - *Meleagris gallopavo*
6. Band-tailed Pigeon - *Columba fasciata*
7. Mourning Dove - *Zenaidura macroura*
8. Black-tailed Jackrabbie - *Lepus californicus*
9. Brush Rabbit - *Sylvilagus bachmani*
10. Western Gray Squirrel - *Sciurus griseus*
11. Douglas Squirrel - *Tamiasciurus douglasii*
12. Chickaree - *Sciurus hudsonicus*
13. Valley Quail - *Lophopus crystallinus*

C. FURBEARERS

1. Mink - *Mustela vision*
2. Muskrat - *Ondatra zibethica*
3. Ringtail Cat - *Bassariscis astutus*
4. Gray Fox - *Urocyon cinereorgenteus*
5. Coyote - *Canus latrans*
6. Bobcat - *Lynx rufus*
7. Pine Marten - *Martes caurina*
8. Raccoon - *Procyon lotor*
9. Weasel - *Mustela frenata*
10. Badger - *Taxidea taxus*

11. Spotted Skunk - *Spilogale gracilis*
12. Striped Skunk - *Mephitis mephitis*
13. River Otter - *Lutra canadensis*

D. WATERFOWI

1. Western Canada Goose - *Branta canadensis occidentalis*
2. Green-winged Teal - *Anas carolinensis*
3. Mallard - *Anas platyrhynchos*
4. Gadwall - *Anas strepera*
5. Widgeon - *Mareca americana*
6. Shoveler - *Spatula clypeata*
7. Wood Duck - *Aix sponsa*
8. Redhead - *Aythya americana*
9. Ring-necked Duck - *Aythya valisineria*
10. Lesser Scaup - *Aythya affinis*
11. Greater Scaup - *Aythya marila*
12. American Golden-eye - *Bucephalia clangula americana*
13. Barrow's Golden-eye - *Bucephala islandica*
14. Buffle-head - *Bucephala albeola*
15. American Scoter - *Oidemia miger americana*
16. Ruddy Duck - *Oxyura jamaicensis rubida*
17. White-winged Scoter - *Melanitta deglandi dixonii*
18. Surf Scoter - *Melanitta perspicillata*
19. Hooded Merganser - *Lophodytes cucullatus*
20. American Merganser - *Mergus merganser americanus*
21. Red-breasted Merganser - *Mergus serrator*

22. Coot - *Fulica americana*
23. Pintail - *Anas acuta*
24. Scaup - *Aythya affinis*

E. FISH

1. Silver Salmon - *Oncorhynchus kisutch*
2. King Salmon - *Oncorhynchus tshawytscha*
3. Steelhead Salmon - *Gairdnerii gairdnerii*
4. Striped Bass - *Roccus saxatilis*
5. American Shad - *Alosa sapidissima*
6. White Sturgeon - *Acipenser transmontanus*
7. Green Sturgeon - *Acipenser medirostris*
8. Largemouth Bass - *Micropterus salmoides*
9. Smallmouth Bass - *Micropterus dolomieu*
10. Bluegill - *Lepomis macrochirus*
11. Green Sunfish - *Lepomis cyanellus*
12. Black Crappie - *Pomoxis nigromaculatus*
13. White Crappie - *Pomoxis annularis*
14. Channel Catfish - *Ictalurus punctatus*
15. Rainbow Trout - *Salmo gairdnerii*
16. Hardhead - *Mylopharodon conocephalus*
17. White Catfish - *Ictalurus catus*
18. Brown Bullhead - *Ictalurus nebulosus*
19. Carp - *Cyprinus carpio*
20. Hitch - *Lavinia exilicauda*
21. Sacramento Squawfish - *Ptychocheilus grandis*

22. Splittail - *Pogonichthys macrolepidotus*
23. Venus Roach - *Hesperoleucus navarroensis*
24. Gualala Roach - *Hesperoleucus parvipinnis*
25. Mosquitofish - *Gambusia affinis*
26. Tule Perch - *Hysterocarpus traskii*
27. Riffle Sculpin - *Cottus gulosus*
28. Dover Sole - *Heterosomata symphurus*
29. Albacore Tuna - *Thunnus alalunga*
30. Blue Rockfish - *Sebastes mystinus*
31. Crab
32. Cabezon - *Scorpaenichthys marmoratus*
33. Smelt - *Osmerus moradax*
34. Lincod - *Ophiodon elongatus*
35. Surf Perch - *Embiotocidae*
36. Abalone - *Haliotis*
37. Flatfish - *Heterosomato*
38. Sanddab - *Citharichthys sordidus*
39. California Halibut - *Paralichthys californicus*
40. Giant Sea Bass - *Stereolepis gigas*
41. Kelp Bass - *Paralabrax clathratus*
42. Ocean Whitefish - *Gaulolatilus princeps*
43. Sablefish - *Anaplopoma fimbria*

PARKS AND RECREATION

SHORELINE

Mendocino County's shoreline is 132.0 miles long. Of this ocean frontage, 13.25 miles are publicly owned.

Existing State Beaches:	Ocean Frontage
Mac Kerricher	3.89 miles
Manchester	2.25
Russian Gulch	1.45
Van Damme	0.32
Westport-Union Landing	3.28
TOTAL - STATE	<u>11.19 miles</u>

Existing County Beaches:	
Hemingway	0.23 mile

Wildlife Conservation Board Access Areas:	
Hesser Drive	1.50 miles
South Kibesillah	0.33
TOTAL PUBLIC BEACH FRONTAGE	<u>13.25 miles</u>

In addition to the above, the "California Coastline Preservation and Recreation Plan" (1971) recommends the following acquisitions:

Ten Mile River State Park	4.50 miles
Point Arena State Park	3.70
Mendocino Coast State Park	6.20
TOTAL - PROPOSED	<u>14.40 miles</u>

If acquired, these new additions would bring shoreline frontage owned by the State to a total of 25.59 miles and would increase the total public beach frontage to 27.65 miles.

Of the shoreline frontage, 80 miles are rocky shores and headlands and 52 miles are sandy beach.

TABLE 22
STATE PARKS

<u>Park Name</u>	<u>Acreage</u>	<u>Water* Frontage</u>	<u>Camping Units</u>	<u>Picnicking Units</u>
Hendy Woods State Park	604.7	16,300-R	92	25
Indian Creek State Reserve	15.1	-	-	2
Mac Kerricher State Park	285.7	20,487-O	143	12
Mailliard Redwoods State Reserve	242.0	-	-	1
Manchester State Beach	650.5	11,870-O	50	5
Montgomery Woods State Reserve	918.6	-	-	-
Paul M. Denimick Campground	11.8	2,350-R	28	6
Russian Gulch State Park	1,162.0	7,630-O	35	14
Van Damme State Park	1,109.9	1,700-O	79	9
Westport-Union Landing State Beach	31.5	17,310-O	-	-
Adm. Wm. Standley State Rec. Area	45.2	3,200-R	-	2
Reynolds Campground	375.0	9,000-R	50	-
Smithe Redwoods State Reserve	462.2	4,240-R	-	-
Standish-Hickey State Rec. Area	915.4	9,210-R	162	8
TOTAL	6,829.6	-	639	84

The State Department of Parks and Recreation reported a total visitor attendance of 771,331 for fiscal year 1970-71 to Mendocino County State Parks.

*R = River frontage)
O = Ocean frontage) Frontage given in feet.

Two marine preserves have been proposed for the Mendocino Coast: Laguna Point and Point Cabrillo.

GOLF COURSES

Little River Inn Country Club (Little River)	18 holes
Ukiah Municipal Golf Course (Ukiah)	18 holes
Brooktrails Golf Course (Willits)	9 holes

OTHER FACILITIES

A variety of other historical, cultural, and recreational attractions exist in Mendocino County, including:

- Squaw Rock Historical Monument
- The Skunks (California Western Railroad)
- Fort Bragg Historical Monument
- Round Valley Historical Monument
- Mendocino Coast Botanical Garden
- Mendocino Art Center

FORESTS

Mendocino National Forest	219,000 acres
Jackson State Forest	51,225 acres

BLM LANDS

The Bureau of Land Management maintains lands within Mendocino County for the purposes of preserving hunting and fishing access, to secure more favorable conditions for waterflow, and to provide recreational facilities. The most notable BLM facility is the Cow Mountain Resource Area.

COW MOUNTAIN RESOURCE AREA*:

Private Ownership	37,560 acres
Public Ownership	
United States	23,230
State	6,640
Total Acreage	<u>67,430 acres</u>

Four recreation areas are maintained by the BLM with the Cow Mountain Area:

Mayacmas, Willow Creek, Red Mountain, and Sheldon Creek. Facilities in these areas include camping and picnicking units, restrooms, and water.

Other BLM lands are scattered throughout the County and amount to 109,935 acres, bringing the total land ownership by BLM in Mendocino County to 133,165 acres.

LAKE MENDOCINO:

The United States Corps of Engineers operates Coyote Dam and its reservoir, Lake Mendocino, and maintains a number of recreation facilities. Acreage under Federal ownership includes:

Water Surface	1,700 acres
Land	2,200
Total	<u>3,900 acres</u>

Facilities include two boat launching ramps, camping and picnicking units, boat slips, and restrooms. It was estimated that 1.5 million people used the facilities last year (1972) and indications are that this usage will continue to become more intense.

*The Cow Mountain Resource Area is within both Mendocino and Lake Counties. Acreage figures above are for Mendocino portion only.

TABLE 23
COUNTY PARKS

<u>Name of Site</u>	<u>Acre- age</u>	<u>Picnick- ing</u>	<u>Tennis</u>	<u>Hik- ing</u>	<u>Swim- ing</u>	<u>Group Camp- ing</u>	<u>Fish- ing</u>	<u>Rest- rooms</u>
Faulkner	40	x						x
Indian Creek	15	x						x
Low Gap	80	x	x	x				x
Mill Creek	400	x		x	x	x		x
McKee - Linear Parkway	-						x	x

In addition to the above, the County provides sanitation stops at Westport, Seaside Beach, and Big River.

Other park sites which are not owned, but are maintained by the County, include:

<u>Name of Site</u>	<u>Ownership</u>	<u>Comments</u>
South Kibesillah	State	6 acre-picnicking and fishing
Hesser Drive	State	10 acre-picnicking and fishing
Oak Flat	State	Picnic grounds
Little Squaw Rock	State	Picnic grounds
Commisky Station Road	State	Picnic grounds
Navarro River	Private	Beach access

SCENIC HIGHWAYS

The "Master Plan of State Highways Eligible for Official Scenic Highway Designation" designates two potential scenic highway routes within Mendocino County:

1. State Route 1 from the Sonoma-Mendocino County line to the junction with U. S. 101 and U. S. 101 north to the County line.
2. State Route 20.

The State Plan, however, leaves a great deal of the initiative and authority to actually implement the plan to local agencies. Recent State legislation requires local governmental agencies to include a Scenic Highways Element in their General Plans. Mendocino County has the opportunity to develop such an element which goes beyond the State Plan in scenic route designation as well as providing an active implementation program.

Some potential scenic highways within the County include:

State Route 1	105 miles
State Route 128	52
U. S. 101	106
State Route 20 (Willits to Fort Bragg)	34
State Route 20 (Calpella to County line)	11
State Route 175 (Hopland Road)	9
State Route 253 (Boonville Road)	19
Mountain House Road	9
Eureka Hill Road (including Ten Mile, Iverson and Old Stage Roads)	17
Potter Valley Road (to Van Arsdale Resv.)	12
East Side Road	15
Philo-Greenwood Road	18
Flynn Creek Road	8
State Route 261 (Longvale to Covelo)	29
Branscomb Road	13
Total	<u>457 miles</u>

AIRPORTS

Five utility airports exist within the County; two are municipal and three are County-owned.

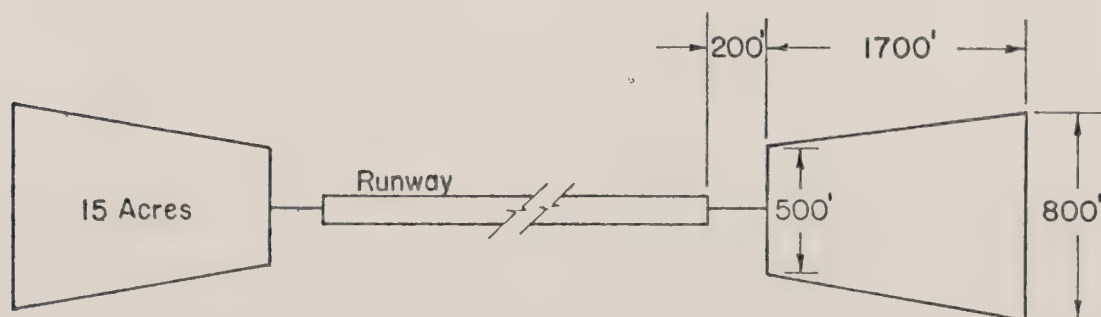
TABLE 24

AIRPORTS IN MENDOCINO COUNTY

<u>Airport Name</u>	<u>Acreage</u>	<u>Runway Length</u>	<u>No. Based Aircraft</u>
Boonville County	24	3,300 feet	5
Ukiah Municipal	160	5,000 feet	61
Mendocino County	658	5,250 feet	10
Willits Municipal	-	3,000 feet	9
Round Valley County	115	3,400 feet	5

The Federal Aviation Administration (FAA) recommends clear zones at the ends of runways. The size of the clear zone depends upon the use of the airport and the size of the runway. For utility and larger than utility runways, the size ranges from 8 acres to 79 acres.

The clear zones for a typical utility runway are illustrated below:



FAULTS AND HAZARDS

A number of known faults exist within the County. The most notable faults are the San Andreas, which enters the County from the sea just north of Manchester and runs south paralleling the coast approximately five miles inland, and the Healdsburg fault which begins in Boonville and runs south-easterly into Sonoma County.

Tsunami areas are areas along the coast which are subject to wave action which is the result of submarine earth movements or volcanic eruptions. Two low coastal areas along the Mendocino coast have been identified as potential tsunami hazard areas:

1. In the northern portion of the County from just south of Rockport to Inglenook.
2. In the southern portion of the County from Malto Pass Creek (just north of Manchester State Beach) to Steens Landing.

A flood plain exists along the Russian River from Lake Mendocino south. However, Coyote Dam has been effective to date in preventing major loss to property during peak rainy seasons.

CULTURAL RESOURCES

Mendocino County is rich in cultural resources. While certain areas of the County are very familiar to historians and archaeologists, many parts remain unknown. A comprehensive inventory, obtained through research and survey, is needed.

As defined by the California State Archaeological Task Force (Moratto, 1973), an archaeological site is, "any mound, midden, settlement location, burial ground, mine, trail, rock art or any other location containing evidence of human activities which took place before 1750 A.D." In Mendocino County, about 1,500 such archaeological sites have been recorded. Files may be found at U. C. Berkeley (790 site records), U.C.L.A. (238 site records), and the California Department of Parks and Recreation in Sacramento (616 site records); some records are duplicates. Others are recorded at various small institutions such as Santa Rosa Junior College and with responsible avocational archaeologists. The Mendocino County Museum will also have copies of the site records in the near future for County reference.

Primarily because of Federally funded surveys in connection with reservoir planning, some sizeable portions of Mendocino County have been systematically surveyed by professional archaeologists. Accordingly, known archaeological sites concentrate in the following areas (King, 1973):

Round Valley - Hulls Valley - Williams Valley Etsel Flat - Eden Valley - Upper Middle Fork, Eel River (High Dos Rios Dam area and adjacent)...	ca. 1,000 sites
South Eel River (English Ride Reservoir area)....	ca. 19 sites
North Redwood Valley.....	ca. 20 sites
Forsythe Creek.....	ca. 20 sites
Coast (primarily north of Fort Bragg).....	ca. 150 sites
Miscellaneous scattered reports.....	ca. 300 sites

The 1,500 archaeological sites recorded in Mendocino County are believed to represent between 10 percent and 20 percent of the total number that ever existed there (King, 1973). Of the original figure, approximately 25 percent (Moratto, 1973) have been destroyed by agriculture, logging, and forestry practices, road, reservoir and urban construction,

vandalism, and natural causes. Compared to other California counties, Mendocino is relatively undisturbed.

An historical site may be defined as "any structure, place or feature which is or may be significant in the State's post 1542 A.D. history, architecture or culture." California's Archaeological Task Force further states: "Historic sites established prior to 1750 A.D. are also, concomitantly, archaeological sites." The historical sites of Mendocino County, by this definition, are numerous. Records of early stage or railroad stops, logging ports, chapels or homesteads may be found on old maps, inside written histories or locked in the memories of old timers. No systematic evaluation of the historical resources has been complete; no comparative figures are available.

CONCLUSIONS

The entire County of Mendocino has never been systematically searched for cultural resources. An "Inventory Committee", proposed by the County Board of Supervisors is being formed by the Mendocino County Museum staff to gather any information available through research. Some resources, however, may only be located by ground surveys. Then the valuable cultural resources of prehistory and history may be protected.

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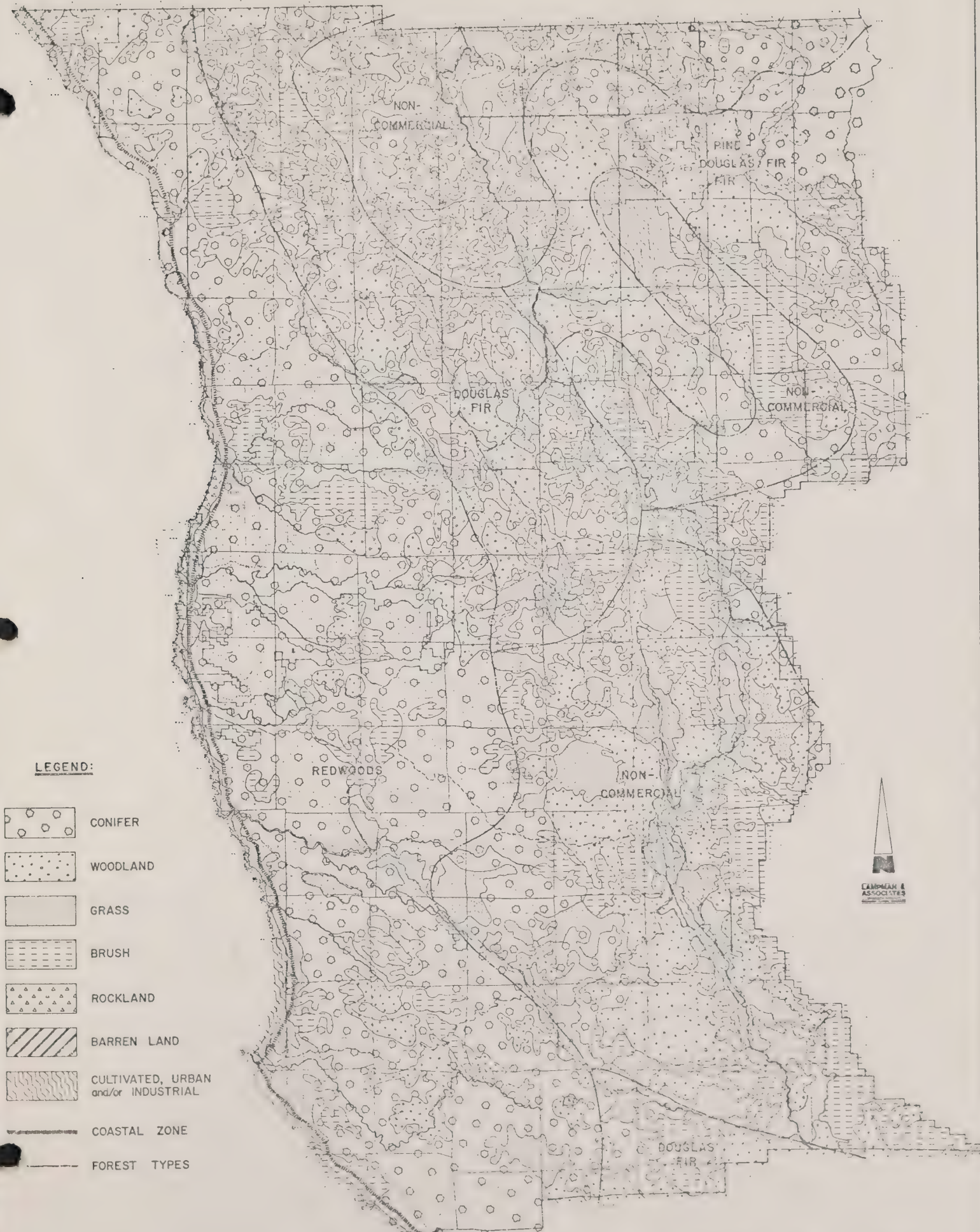


EXISTING CONDITIONS

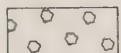
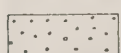



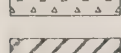
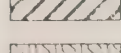
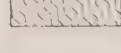
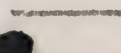
MENDOCINO COUNTY, CALIFORNIA

PLATE 1





LEGEND:

-  CONIFER
-  WOODLAND
-  GRASS
-  BRUSH
-  ROCKLAND
-  BARREN LAND
-  CULTIVATED, URBAN and/or INDUSTRIAL
-  COASTAL ZONE
-  FOREST TYPES





KINGS RANGE
CONSERVATION
AREA

SOUTH
FORK
EEL RIVER

EEL RIVER

MENDOCINO

NATIONAL

FOREST

TEN
MILE
RIVER

FORT
BRAGG

NOYO RIVER

JACKSON

STATE

FOREST

WILLITS

BIG RIVER

LEGEND:



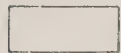
URBAN AREA



MIGRATORY DEER
WINTER RANGE



NATIONAL & STATE
FORESTS & PARKS



NATIONAL FOREST
BOUNDARY



ECOSYSTEM COASTAL
WETLANDS

NAVARRO
RIVER

ELK
CREEK

UKIAH

RUSSIAN
RIVER

GARCIA
RIVER

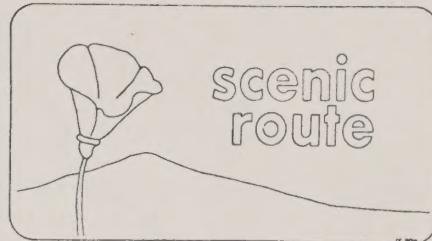
GUALALA
RIVER



CALIFORNIA SCENIC HIGHWAY SYSTEM

MASTER PLAN OF STATE
HIGHWAYS ELIGIBLE FOR OFFICIAL
SCENIC HIGHWAY DESIGNATION

JANUARY 1, 1972



STATE OF CALIFORNIA
HIGHWAYS AND TRANSPORTATION AGENCY
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS



LAMPMAN & ASSOCIATES
GOVERNMENTAL CONSULTANTS
MANAGEMENT PLANNING ENGINEERING



LEGEND

- OFFICIALLY DESIGNATED PORTION
- IN MASTER PLAN NOT OFFICIALLY DESIGNATED
- CONNECTING NATIONAL PARK AND MONUMENT ROAD
- STATE HIGHWAY SYSTEM AND LEGISLATIVE ROUTE NUMBER

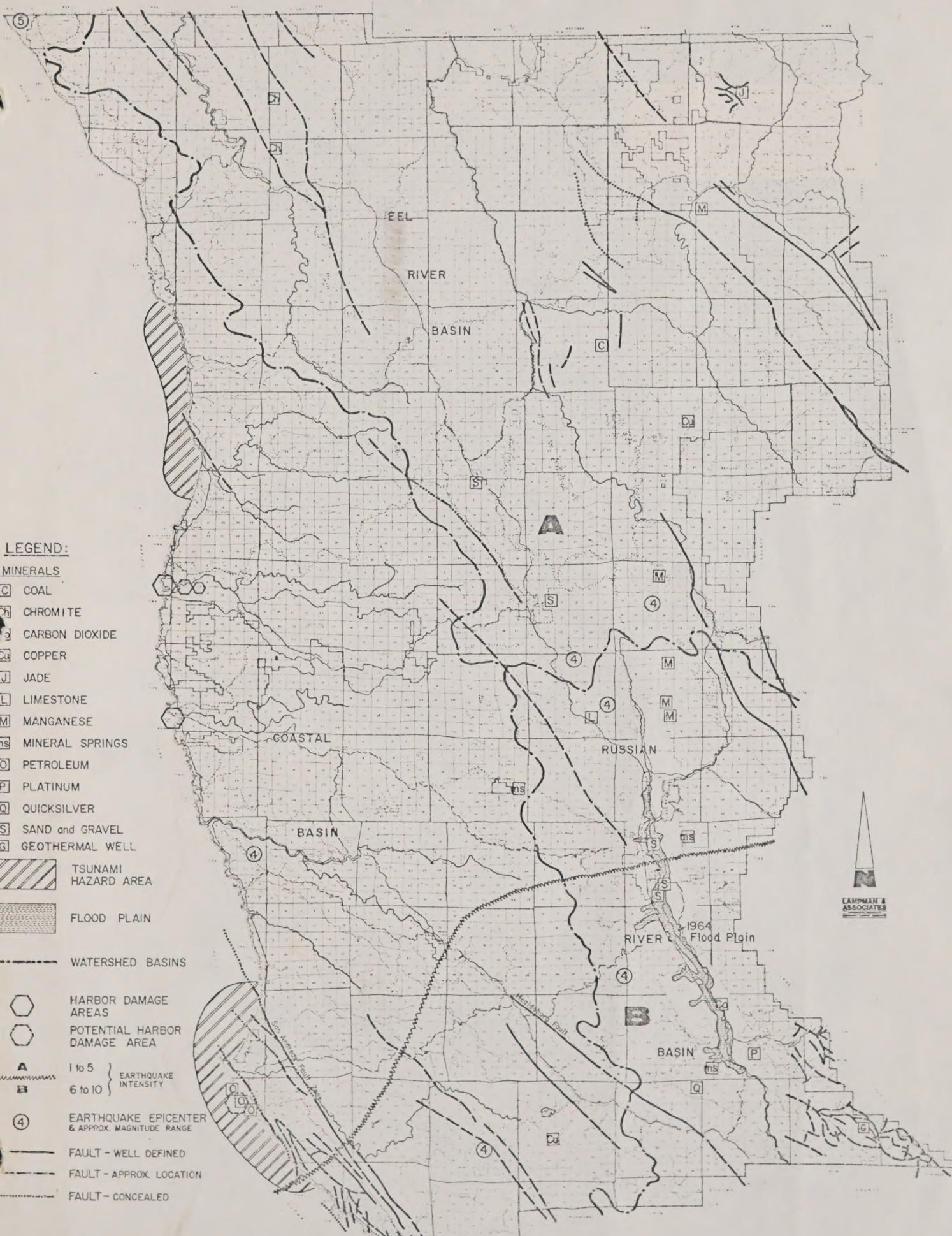
SCALE IN MILES
0 10 20 30 40 50

CALIFORNIA

JOHN HENRY SMITH

WATER 1/2 OF 1/2
BANKS ALONG THE RIVER
FROM DEPT. OF AGRIC.





LEGEND:

MINERALS

- C COAL
- H CHROMITE
- J CARBON DIOXIDE
- L COPPER
- J JADE
- L LIMESTONE
- M MANGANESE
- MS MINERAL SPRINGS
- O PETROLEUM
- P PLATINUM
- Q QUICKSILVER
- S SAND and GRAVEL
- G GEOTHERMAL WELL

TSUNAMI HAZARD AREA

FLOOD PLAIN

WATERSHED BASINS

HARBOR DAMAGE AREAS

POTENTIAL HARBOR DAMAGE AREA

A 1 to 5 } EARTHQUAKE INTENSITY

B 6 to 10 }

4 EARTHQUAKE EPICENTER & APPROX. MAGNITUDE RANGE

FAULT - WELL DEFINED

FAULT - APPROX. LOCATION

FAULT - CONCEALED



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